

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

*Sequence & Modification*

SEQ ID NO.: 8	8	5'-CCTACTAGCGTTCTCATC-3' (133-1)
SEQ ID NO.: 9	9	5'-CCTACTAGCXTTCTCATC-3' (139-2)
SEQ ID NO.: 10	10	5'-CCTACTAXCGTTCTCATC-3' (133-2)
SEQ ID NO.: 11	11	5'-CCTACTXGCGTTCTCATC-3' (139-3)
SEQ ID NO.: 12	12	5'-CCTACXAGCGTTCTCATC-3' (133-3)
SEQ ID NO.: 13	13	5'-CCTAXTAGCGTTCTCATC-3' (139-4)
SEQ ID NO.: 14	14	5'-CCTXCTAGCGTTCTCATC-3' (133-4)
SEQ ID NO.: 15	15	5'-CCTXCTAGCCTTCTCATC-3' (145-10a)
SEQ ID NO.: 16	16	5'-CCTACTAGCGXTCTCATC-3' (133-5)
SEQ ID NO.: 17	17	5'-CCTACTAGCGTXCTCATC-3' (139-7)
SEQ ID NO.: 18	18	5'-CCTACTAGCGTTXTCATC-3' (133-6)
SEQ ID NO.: 19	19	5'-CCTACTAGCGTTCXCATC-3' (139-8)
SEQ ID NO.: 20	20	5'-CCTXXTAGCGTTCTCATC-3' (133-12)
SEQ ID NO.: 21	21	5'-XXTAGCGTTCTCATC-3' (139-6)
SEQ ID NO.: 22	22	5'-CCTACTAGCGTTCXXATC-3' (139-9)
SEQ ID NO.: 23	23	5'-CCTXCTXGCGTTCTCATC-3' (145-10b)

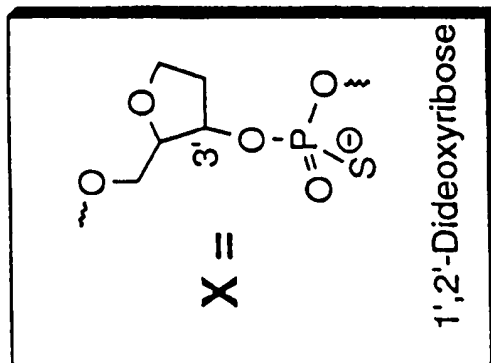


FIG. 1A

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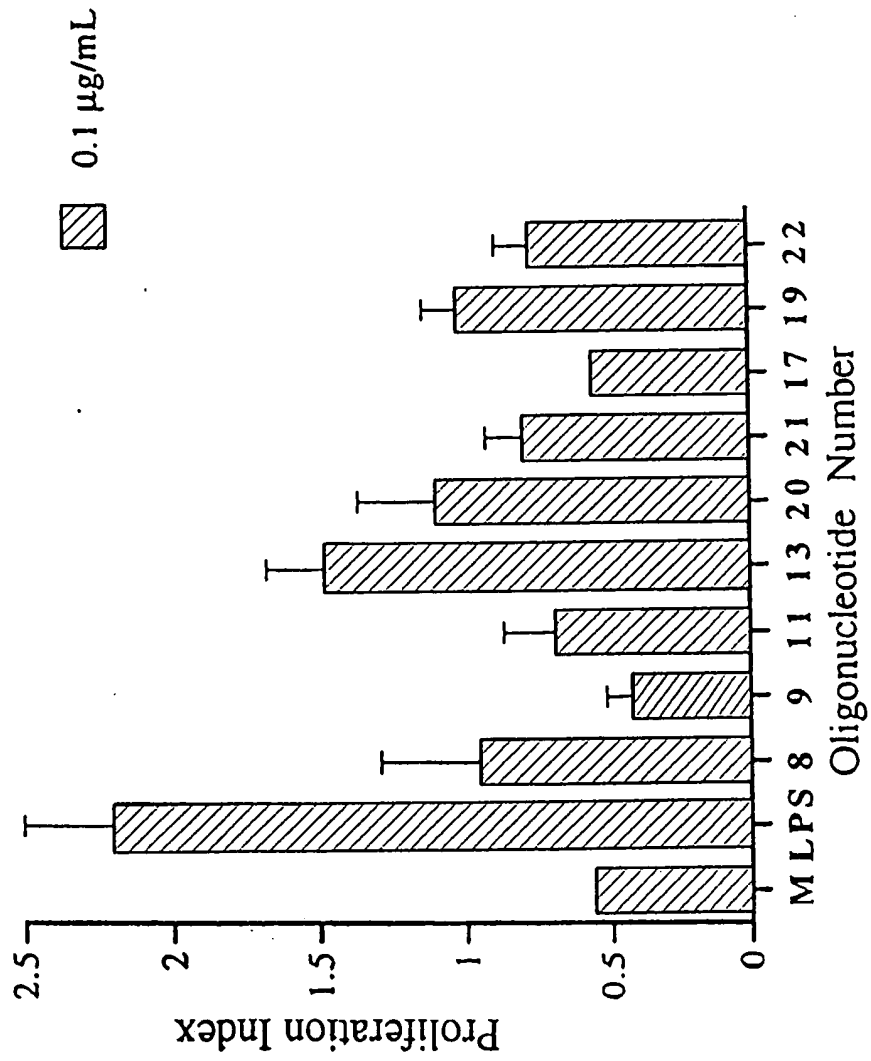


FIG. 1B

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## OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

Oligo No.	Sequence & Modification
SEQ ID NO.: 8	5'-CCTACTAGCGTTCTCATC-3' (133-1)
SEQ ID NO.: 9	5'-CCTACTAGCXTTCTCATC-3' (139-2)
SEQ ID NO.: 10	5'-CCTACTAXCGTTCTCATC-3' (133-2)
SEQ ID NO.: 11	5'-CCTACTXGCGTTCTCATC-3' (139-3)
SEQ ID NO.: 12	5'-CCTACXAGCGTTCTCATC-3' (133-3)
SEQ ID NO.: 13	5'-CCTAXTAGCGTTCTCATC-3' (139-4)
SEQ ID NO.: 14	5'-CCTXCTAGCGTTCTCATC-3' (133-4)
SEQ ID NO.: 15	5'-CCTXCTAGCCTTCTCATC-3' (145-10a)
SEQ ID NO.: 16	5'-CCTACTAGCGXTCTCATC-3' (133-5)
SEQ ID NO.: 17	5'-CCTACTAGCGTXCTCATC-3' (139-7)
SEQ ID NO.: 18	5'-CCTACTAGCGTTXCTCATC-3' (133-6)
SEQ ID NO.: 19	5'-CCTACTAGCGTTCXCATC-3' (139-8)
SEQ ID NO.: 20	5'-CCTXXTAGCGTTCTCATC-3' (133-12)
SEQ ID NO.: 21	5'-XXTAGCGTTCTCATC-3' (139-6)
SEQ ID NO.: 22	5'-CCTACTAGCGTTCXXATC-3' (139-9)
SEQ ID NO.: 23	5'-CCTXCTXGCGTTCTCATC-3' (145-10b)

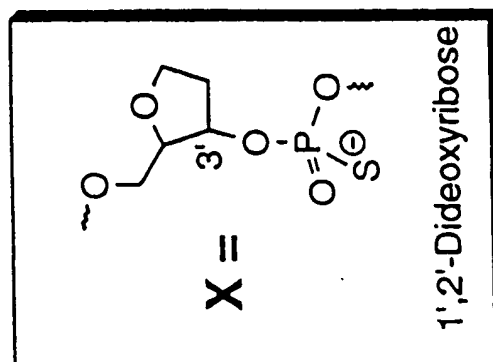


FIG. 2A

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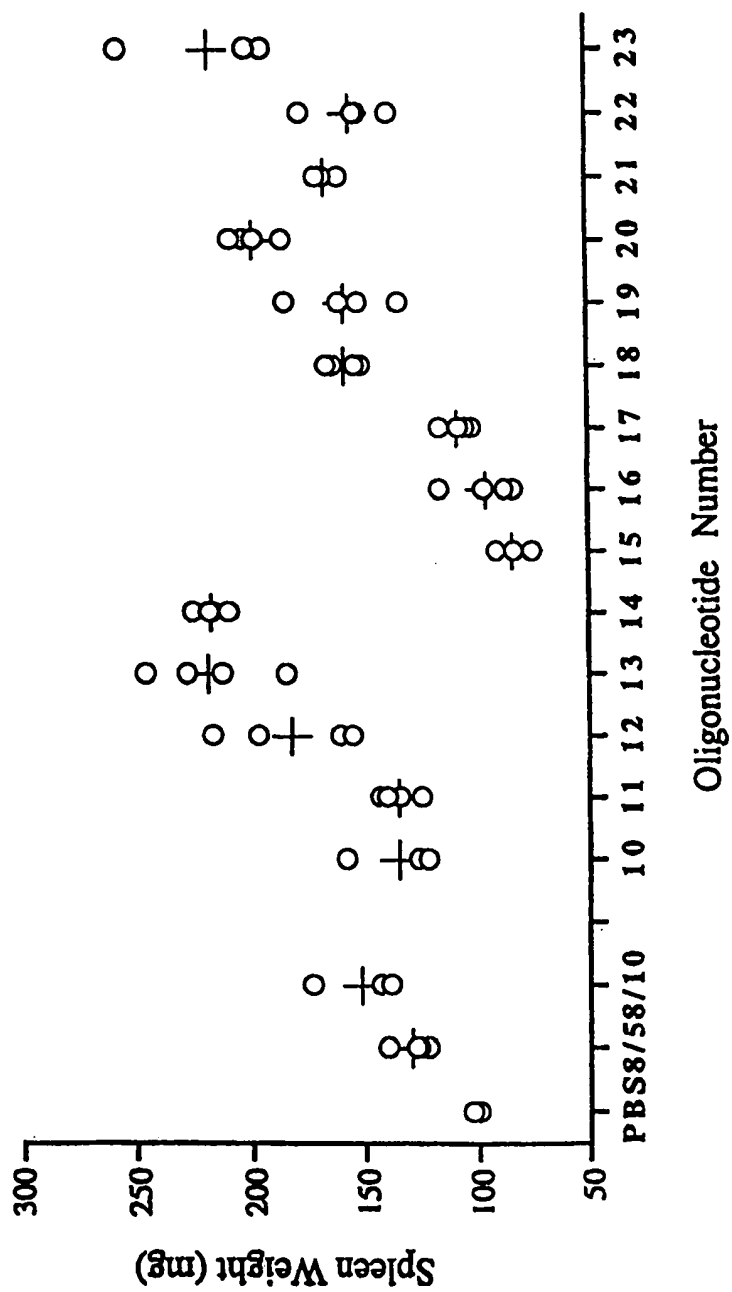


FIG. 2B

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## OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

<i>Oligo No.</i>	<i>Sequence &amp; Modification</i>
SEQ ID NO.: 1	1 5'-CTATCTGACGTTCTCTGT-3' (131-1)
SEQ ID NO.: 105	2 5'-CTATCTGAXGTTCTCTGT-3' (131-13)
SEQ ID NO.: 106	3 5'-CTATCTGXCGTTCTCTGT-3' (131-2)
SEQ ID NO.: 107	4 5'-CTATCXGACGTTCTCTGT-3' (131-3)
SEQ ID NO.: 108	5 5'-CTAXCTGACGTTCTCTGT-3' (131-4)
SEQ ID NO.: 109	6 5'-CTATCTGACGXTCTCTGT-3' (131-5)
SEQ ID NO.: 110	7 5'-CTATCTGACGTTXTCTGT-3' (131-6)

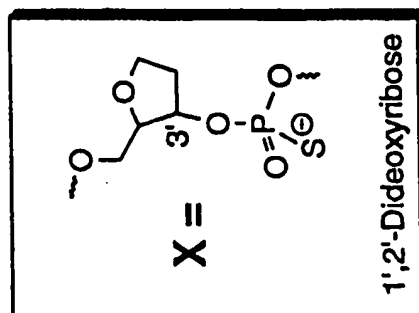


FIG. 3A

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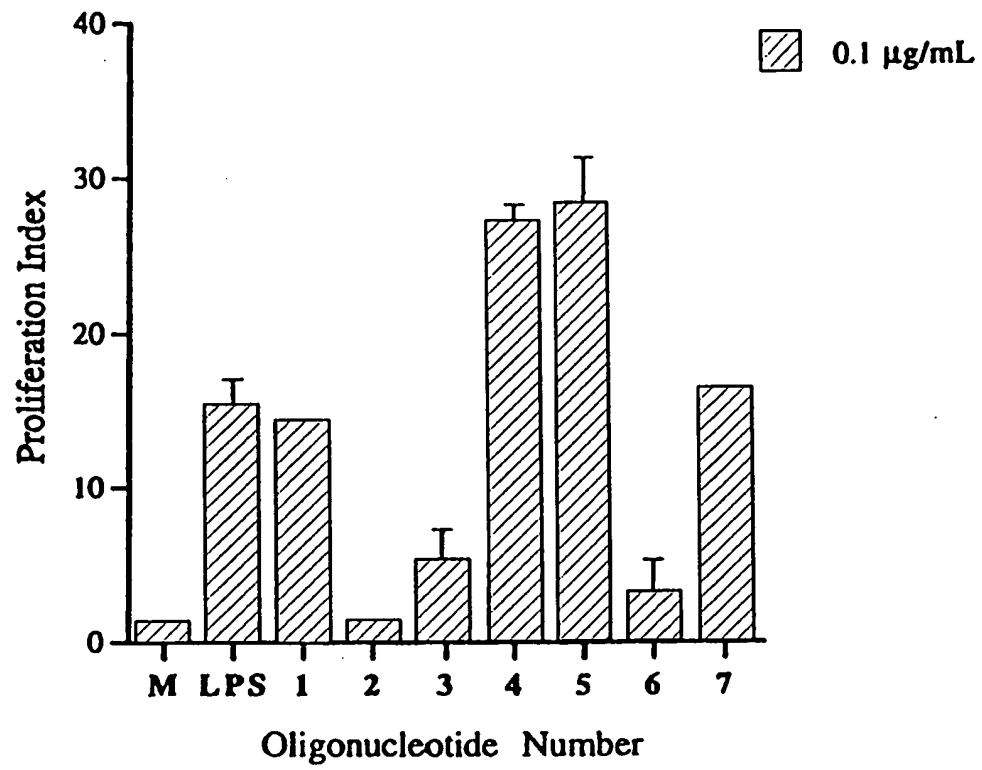


FIG. 3B

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OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

Oligo No.		Sequence & Modification
SEQ ID NO.: 1	1	5'-CTATCTGACGTTCTCTGT-3' (131-1)
SEQ ID NO.: 105	2	5'-CTATCTGAXGTTCTCTGT-3' (131-13)
SEQ ID NO.: 106	3	5'-CTATCTGXCGTTCTCTGT-3' (131-2)
SEQ ID NO.: 107	4	5'-CTATCXGACGTTCTCTGT-3' (131-3)
SEQ ID NO.: 108	5	5'-CTAXCTGACGTTCTCTGT-3' (131-4)
SEQ ID NO.: 109	6	5'-CTATCTGACGXTCTCTGT-3' (131-5)
SEQ ID NO.: 110	7	5'-CTATCTGACGTTXTCTGT-3' (131-6)

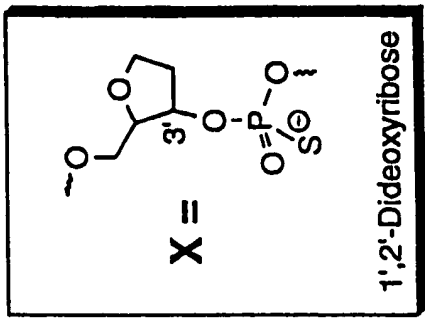


FIG. 4A

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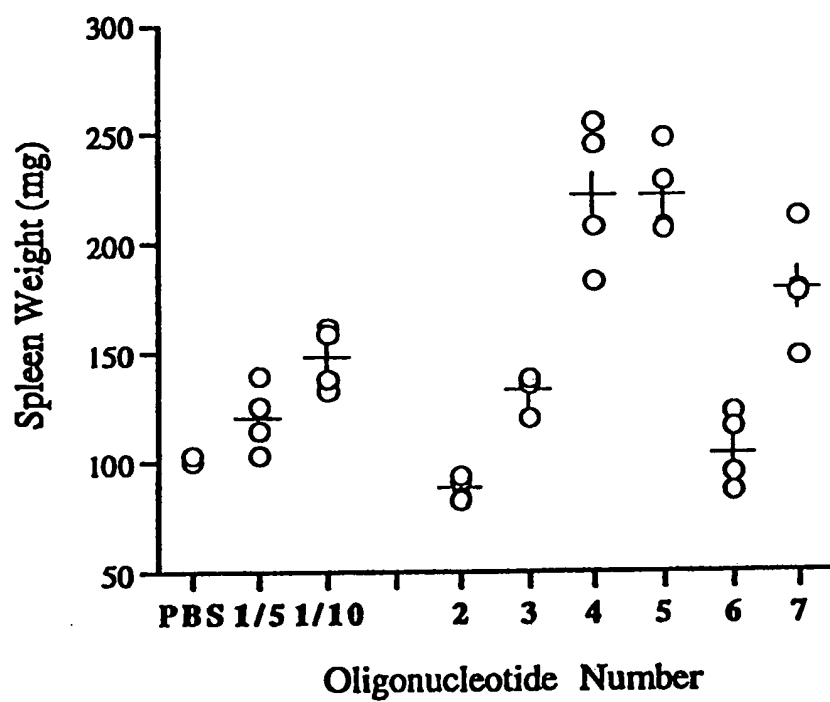


FIG. 4B



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## OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

SEQ ID NO.:	133-1	141-2	141-3	141-4	141-5	141-6	141-7	141-8	141-9	131-1	137-2	137-3	137-4
SEQ ID NO.: 8	5'-CCTACTAGCGTTCTCATC-3'	5'-CCTACTAGCGTTCTCATC-3'	5'-CCTACTXGCGTTCTCATC-3'	5'-CCTAXTAGCGTTCTCATC-3'	5'-CCTXXTAGCGTTCTCATC-3'	5'-XXTAGTAGCGTTCTCATC-3'	5'-CCTACTAGCGTXCTCATC-3'	5'-CCTACTAGCGTTCXCATC-3'	5'-CCTACTAGCGTTCXXATC-3'	5'-CTATCTGACGTTCTCTGT-3'	5'-CTATCTGCGTTCTCTGT-3'	5'-CTATCXGACGTTCTCTGT-3'	5'-CTAXCTGACGTTCTCTGT-3'

## Sequence &amp; Modification

SEQ ID NO.: 8	133-1	5'-CCTACTAGCGTTCTCATC-3'
SEQ ID NO.: 24	141-2	5'-CCTACTAGCGTTCTCATC-3'
SEQ ID NO.: 25	141-3	5'-CCTACTXGCGTTCTCATC-3'
SEQ ID NO.: 26	141-4	5'-CCTAXTAGCGTTCTCATC-3'
SEQ ID NO.: 27	141-5	5'-CCTXXTAGCGTTCTCATC-3'
SEQ ID NO.: 28	141-6	5'-XXTAGTAGCGTTCTCATC-3'
SEQ ID NO.: 29	141-7	5'-CCTACTAGCGTXCTCATC-3'
SEQ ID NO.: 30	141-8	5'-CCTACTAGCGTTCXCATC-3'
SEQ ID NO.: 31	141-9	5'-CCTACTAGCGTTCXXATC-3'
SEQ ID NO.: 1	131-1	5'-CTATCTGACGTTCTCTGT-3'
SEQ ID NO.: 32	137-2	5'-CTATCTGCGTTCTCTGT-3'
SEQ ID NO.: 33	137-3	5'-CTATCXGACGTTCTCTGT-3'
SEQ ID NO.: 34	137-4	5'-CTAXCTGACGTTCTCTGT-3'

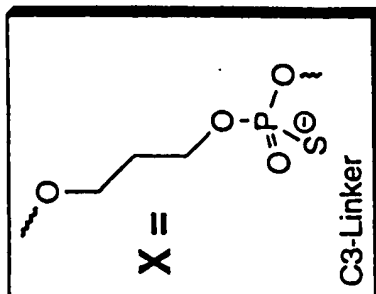


FIG. 5A

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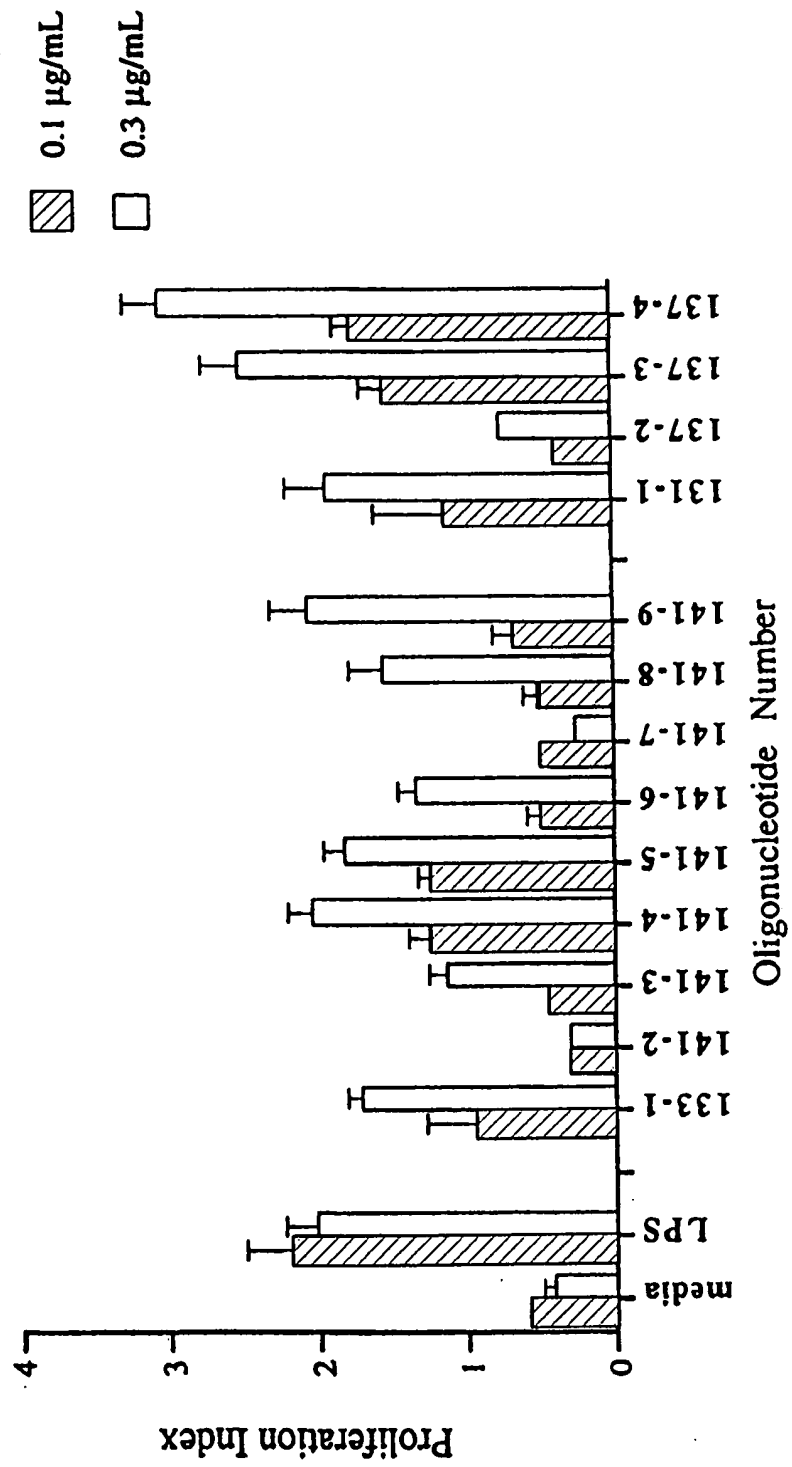


FIG. 5B

# OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

Oligo No.	Sequence & Modification
SEQ ID NO.: 8	133-1
SEQ ID NO.: 24	141-2
SEQ ID NO.: 25	141-3
SEQ ID NO.: 26	141-4
SEQ ID NO.: 27	141-5
SEQ ID NO.: 28	141-6
SEQ ID NO.: 29	141-7
SEQ ID NO.: 30	141-8
SEQ ID NO.: 31	141-9
SEQ ID NO.: 1	131-1
SEQ ID NO.: 32	137-2
SEQ ID NO.: 33	137-3
SEQ ID NO.: 34	137-4

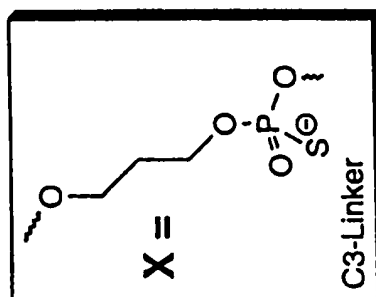


FIG. 6A

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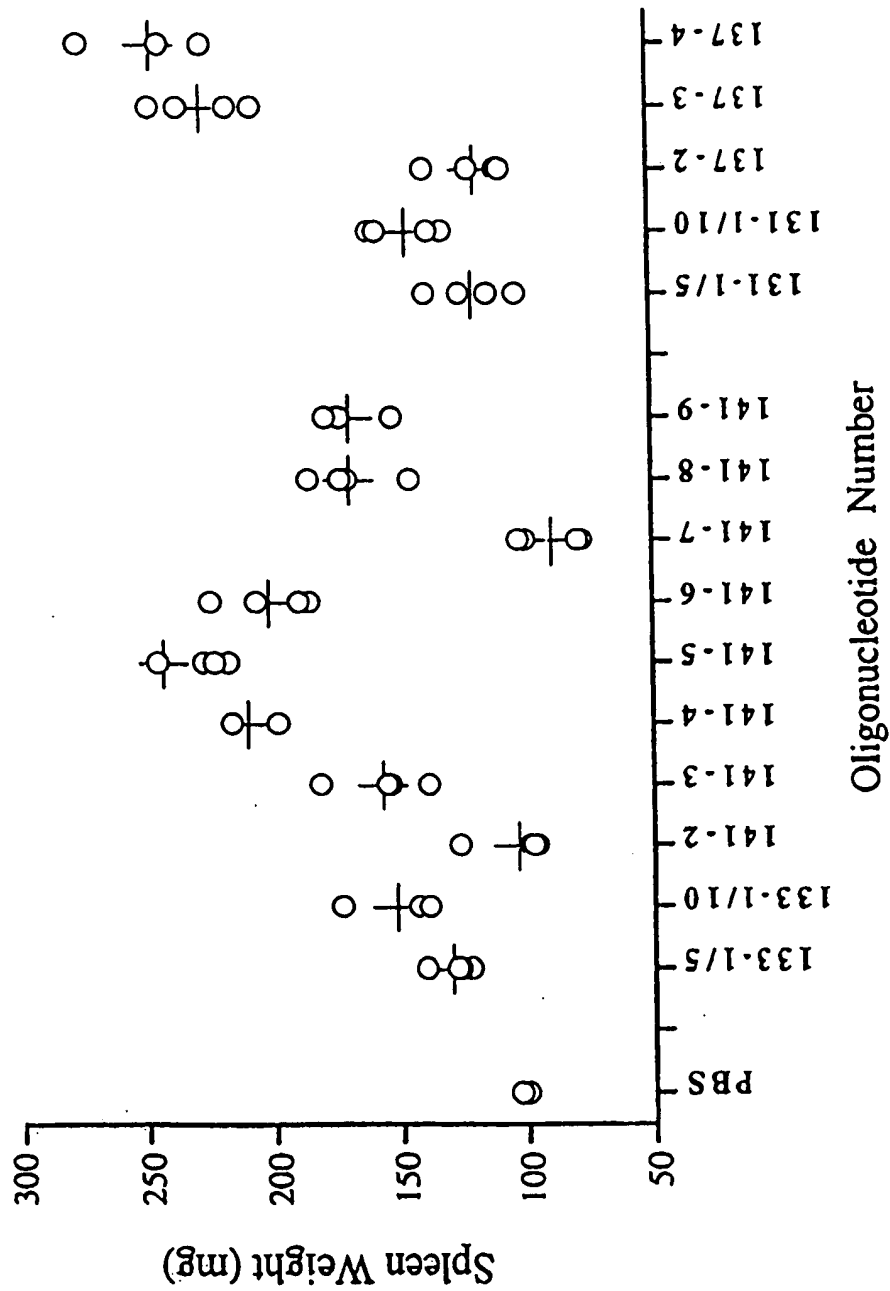


FIG. 6B

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## OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

	<i>Oligo No.</i>	<i>Sequence &amp; Modification</i>
SEQ ID NO.: 1	1	5'-CTATCTGACGTTCTCTGT-3' (131-1)
SEQ ID NO.: 35	2	5'-CTAXCTGACGTTCTCTGT-3' (153-1)
SEQ ID NO.: 36	3	5'-CTATCTGACGTTCTCTGT-3' (153-2)
SEQ ID NO.: 37	4	5'-CTAYCTGACGTTCTCTGT-3' (153-3)
SEQ ID NO.: 38	5	5'-CTATCTGACGTTCTCTGT-3' (153-4)
SEQ ID NO.: 8	6	5'-CCTACTAGCGTTCTCATC-3' (133-1)
SEQ ID NO.: 39	7	5'-CCTXCTAGCGTTCTCATC-3' (155-1)
SEQ ID NO.: 40	8	5'-CCTACTAGCGTTCTCATC-3' (155-2)
SEQ ID NO.: 41	9	5'-CCTYCTAGCGTTCTCATC-3' (155-3)
SEQ ID NO.: 42	10	5'-CCTACTAGCGTTCTCATC-3' (155-4)

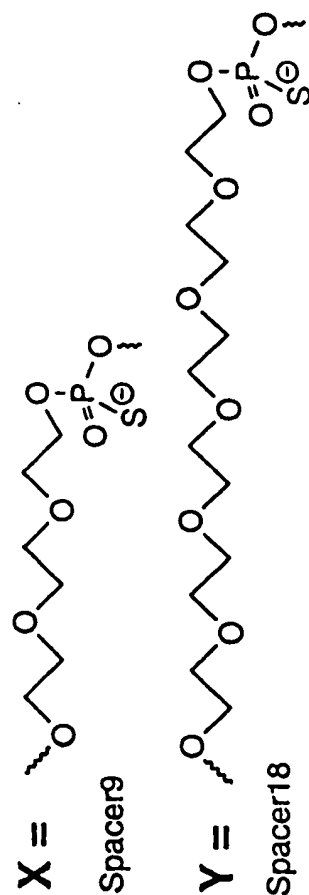


FIG. 7A

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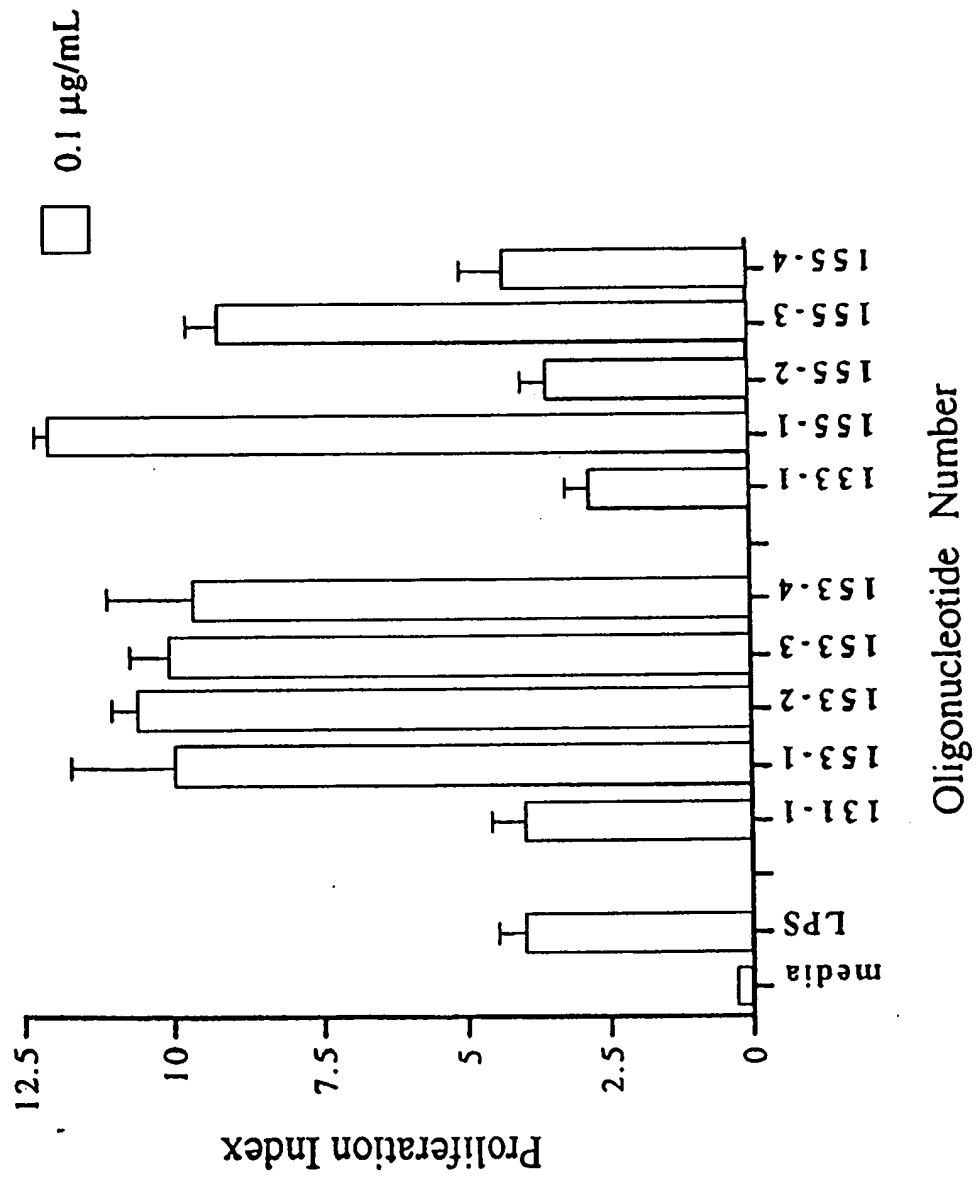


FIG. 7B

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

Oligo No.		Sequence & Modification
SEQ ID NO.: 1	1	5'-CTATCTGACGTTCTCTGT-3' (131-1)
SEQ ID NO.: 35	2	5'-CTAXCTGACGTTCTCTGT-3' (153-1)
SEQ ID NO.: 36	3	5'-CTATCTGACGTTXCXCTGT-3' (153-2)
SEQ ID NO.: 37	4	5'-CTAYCTGACGTTCTCTGT-3' (153-3)
SEQ ID NO.: 38	5	5'-CTATCTGACGTTCYCTGT-3' (153-4)
SEQ ID NO.: 8	6	5'-CCTACTAGCGTTCTCATC-3' (133-1)
SEQ ID NO.: 39	7	5'-CCTXCTAGCGTTCTCATC-3' (155-1)
SEQ ID NO.: 40	8	5'-CCTACTAGCGTTXCXCATC-3' (155-2)
SEQ ID NO.: 41	9	5'-CCTYCTAGCGTTCTCATC-3' (155-3)
SEQ ID NO.: 42	10	5'-CCTACTAGCGTTCYCATC-3' (155-4)

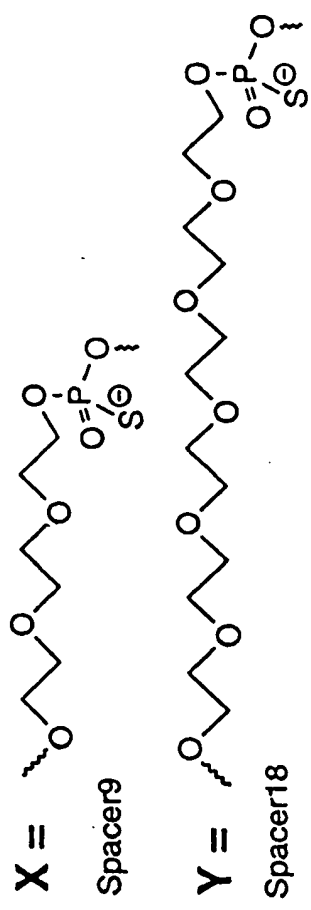


FIG. 8A

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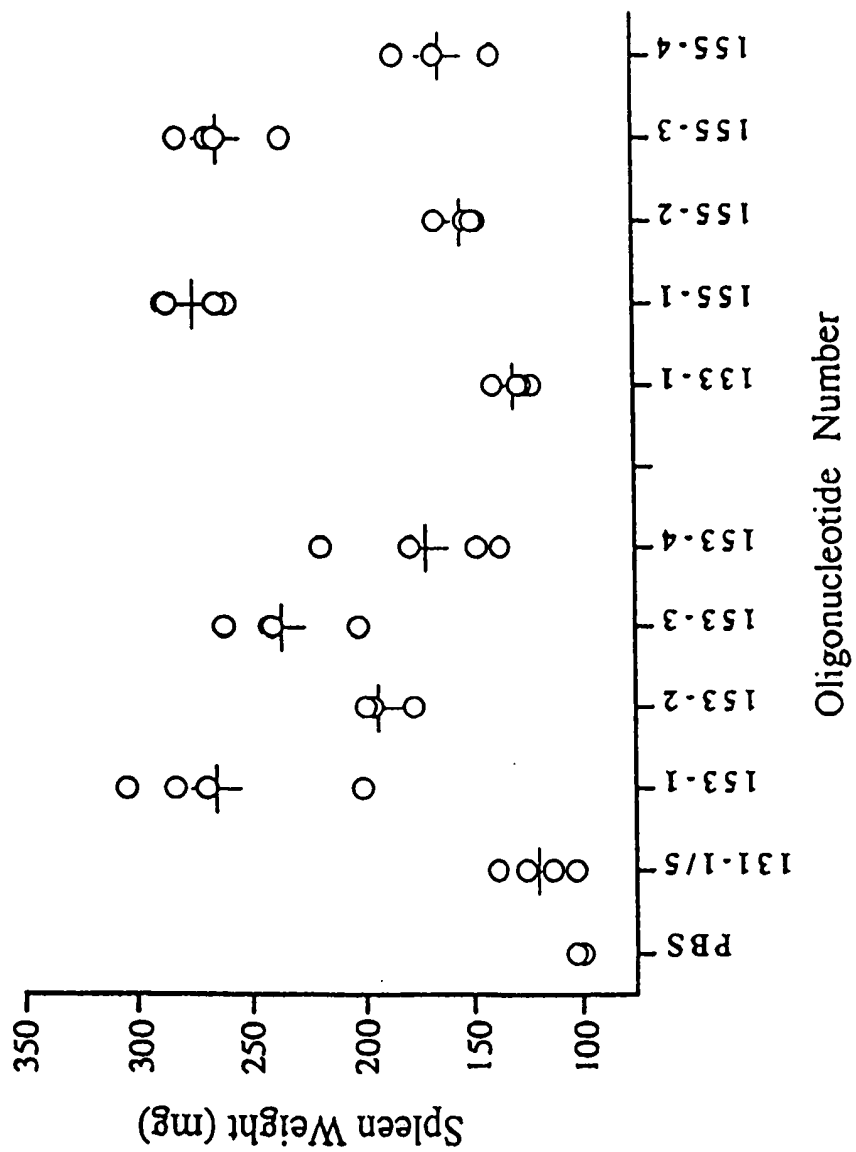


FIG. 8B



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## OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

<i>Oligo No.</i>	<i>Sequence &amp; Modification</i>
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SEQ ID NO.: 1	1	5'-CTATCTGACGTTCTCTGT-3' (131-1)
SEQ ID NO.: 43	2	5'-CTATCTGXCGTTCTCTGT-3' (157-1)
SEQ ID NO.: 44	3	5'-CTATCTXACGTTCTCTGT-3' (157-2)
SEQ ID NO.: 45	4	5'-CTAXCTGACGTTCTCTGT-3' (157-3)
SEQ ID NO.: 46	5	5'-CTATCTGACGTXCTCTGT-3' (157-4)
SEQ ID NO.: 47	6	5'-CTATCTGACGTTCXCTGT-3' (157-5)

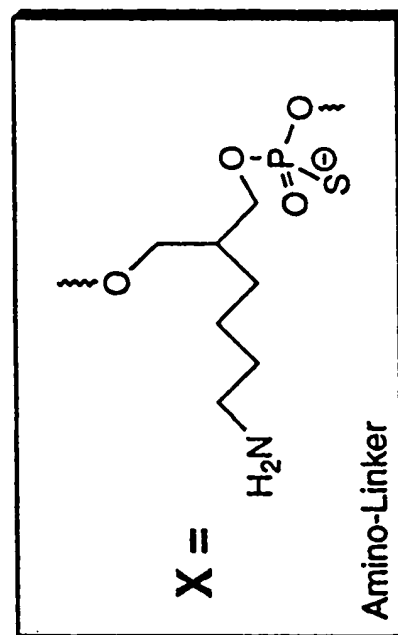


FIG. 9A

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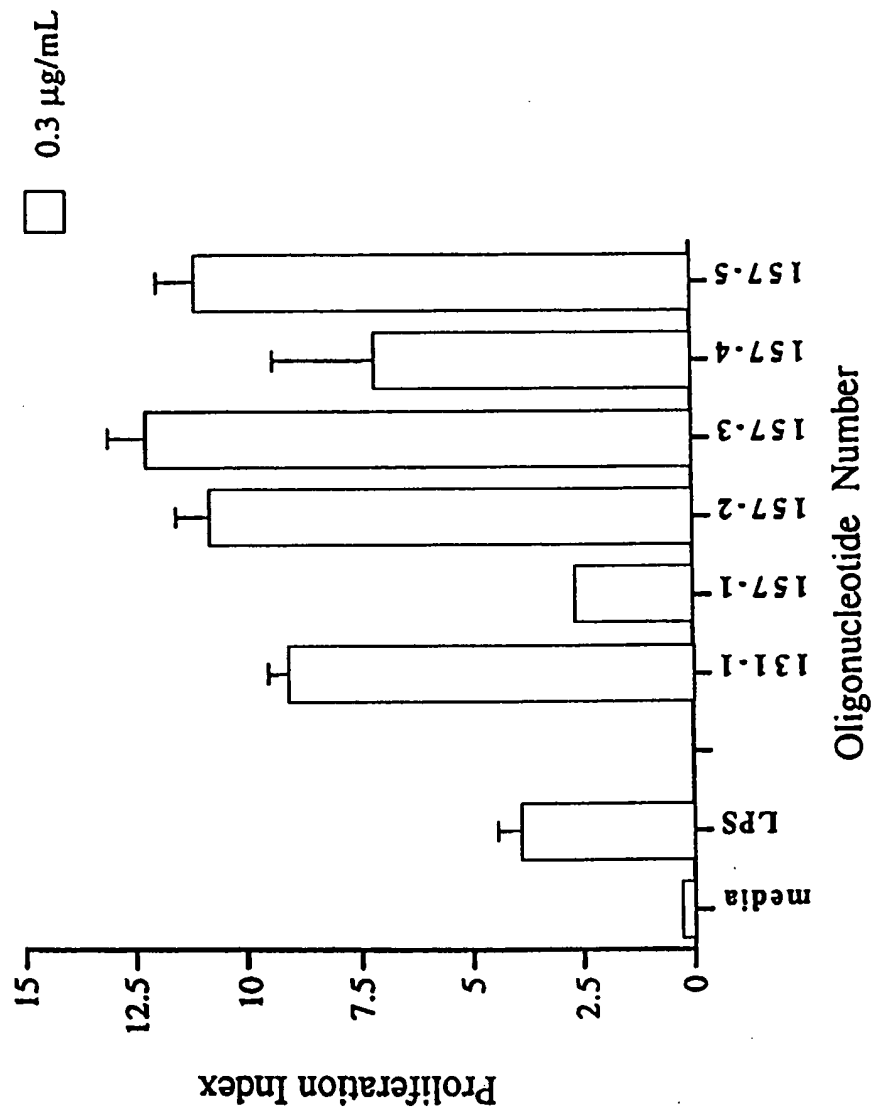


FIG. 9B

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## OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

<i>Seq ID No.</i>	<i>Sequence &amp; Modification</i>
SEQ ID NO.: 1	5'-CTATCTGACGTTCTCTGT-3' (131-1)
SEQ ID NO.: 43	5'-CTATCTGXC GTTCTCTGT-3' (157-1)
SEQ ID NO.: 44	5'-CTATCTXAC GTTCTCTGT-3' (157-2)
SEQ ID NO.: 45	5'-CTAXCTGAC GTTCTCTGT-3' (157-3)
SEQ ID NO.: 46	5'-CTATCTGACGTXCTCTGT-3' (157-4)
SEQ ID NO.: 47	5'-CTATCTGACGTTCXCTGT-3' (157-5)

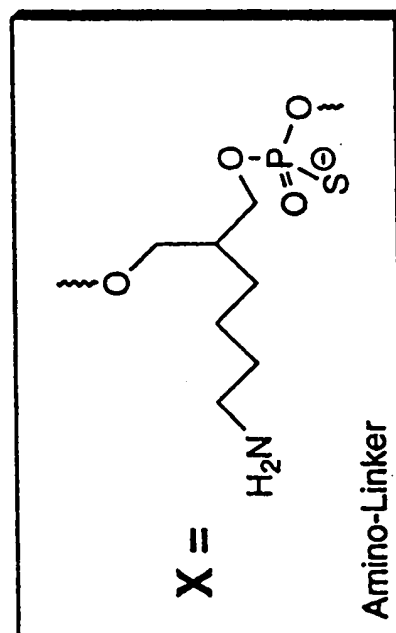


FIG. 10A

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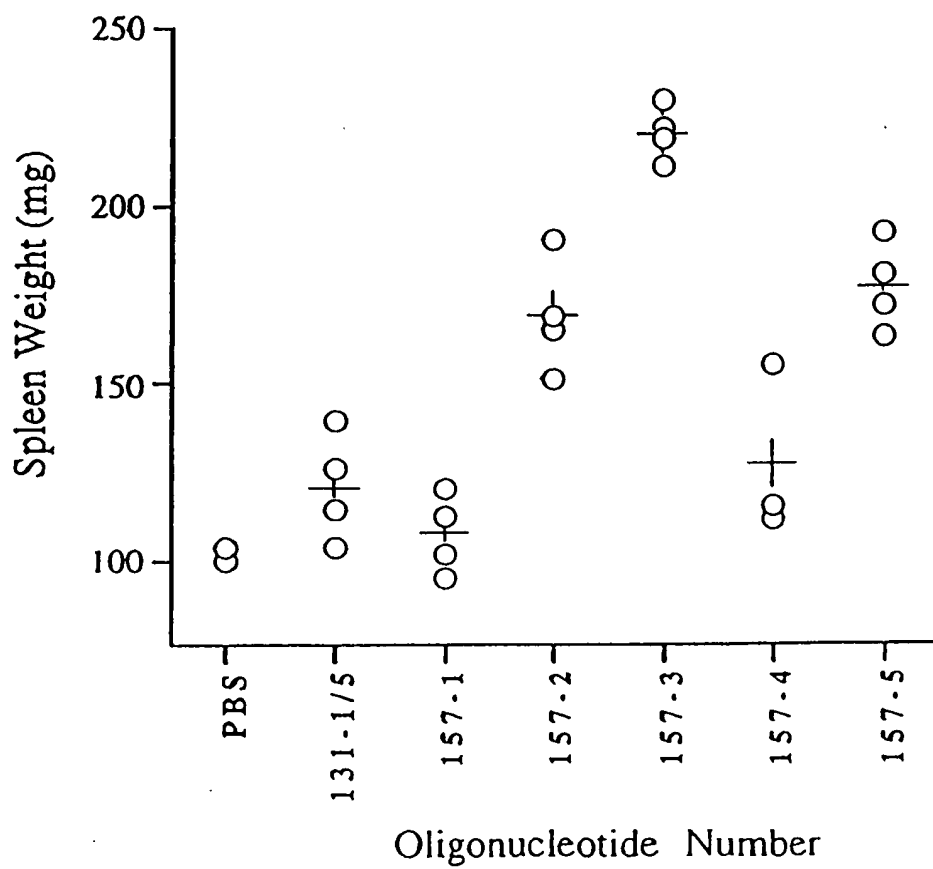
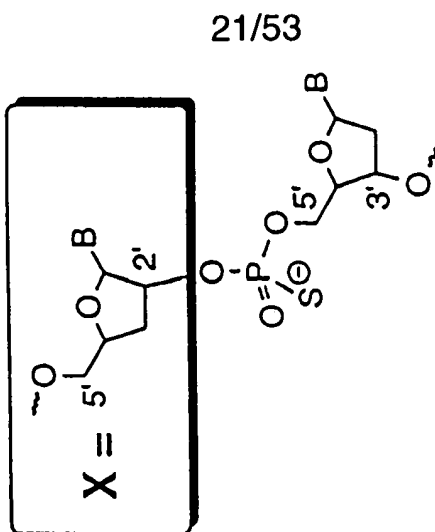


FIG. 10B

## OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

<i>Oligo No.</i>	<i>Sequence &amp; Modification</i>
------------------	------------------------------------

SEQ ID NO.: 1	131-1	5'-CTATCTGACGTTCTCTGT-3'
SEQ ID NO.: 48	159-1	5'-CTATCTGACXTTCTCTGT-3'
SEQ ID NO.: 49	159-2	5'-CTATCTGAXGTTCTCTGT-3'
SEQ ID NO.: 50	159-3	5'-CTATXTGACGTTCTCTGT-3'
SEQ ID NO.: 51	159-4	5'-CTATCTGACGTTCTXTGT-3'
SEQ ID NO.: 8	133-1	5'-CCTACTAGCGTTCTCATC-3'
SEQ ID NO.: 52	161-1	5'-CCTACTAGCXTTCTCATC-3'
SEQ ID NO.: 53	161-2	5'-CCTACTAGXGTTCTCATC-3'
SEQ ID NO.: 54	161-3	5'-CCTACTAXCGTTCTCATC-3'
SEQ ID NO.: 55	161-4	5'-CCTAXTAGCGTTCTCATC-3'
SEQ ID NO.: 56	161-5	5'-CCTACTAGCGTTCTXATC-3'



3'-Deoxynucleoside

FIG. 11A

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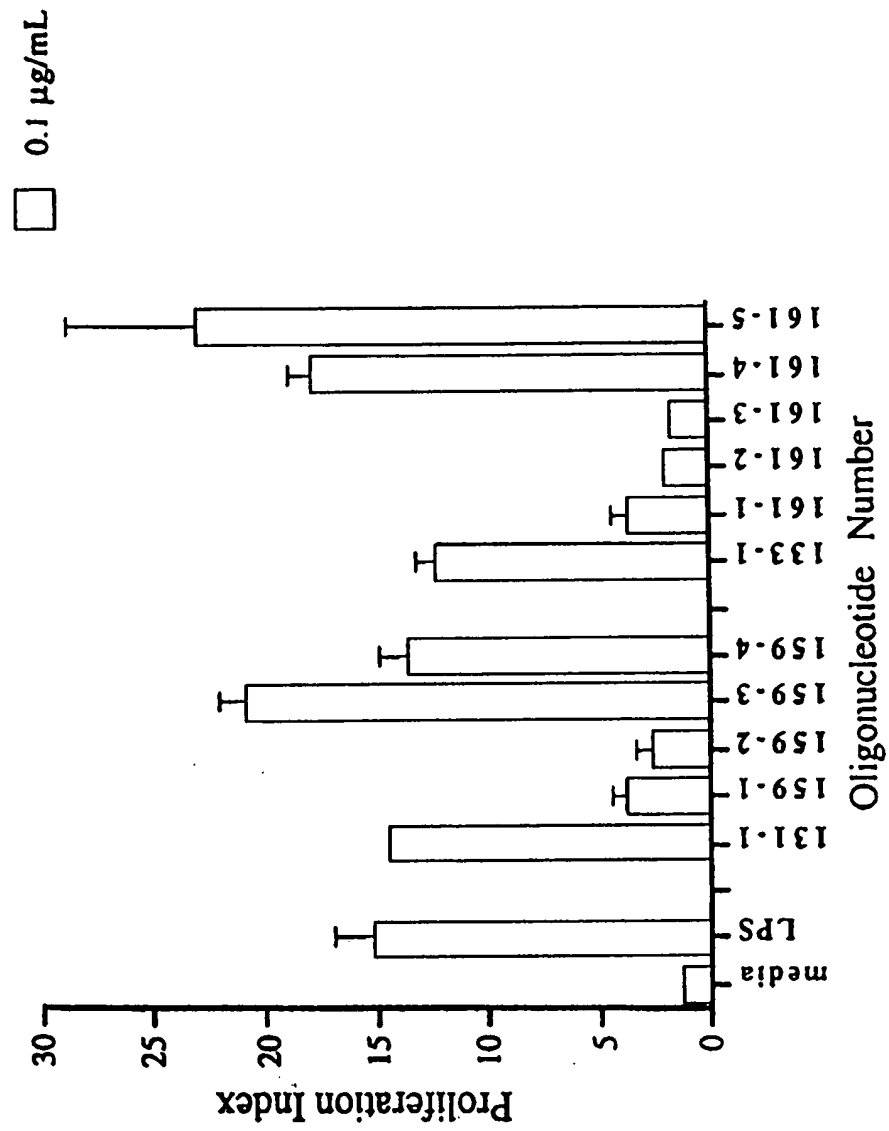


FIG. 11B

## OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

Oligo No.	Sequence & Modification
SEQ ID NO.: 1 131-1	5'-CTATCTGACGTTCTCTGT-3'
SEQ ID NO.: 48 159-1	5'-CTATCTGACXTTCTCTGT-3'
SEQ ID NO.: 49 159-2	5'-CTATCTGAXGTTCTCTGT-3'
SEQ ID NO.: 50 159-3	5'-CTATXTGACGTTCTCTGT-3'
SEQ ID NO.: 51 159-4	5'-CTATCTGACGTTCTXTGT-3'
SEQ ID NO.: 8 133-1	5'-CCTACTAGCGTTCTCATC-3'
SEQ ID NO.: 52 161-1	5'-CCTACTAGCXTTCTCATC-3'
SEQ ID NO.: 53 161-2	5'-CCTACTAGXGTTCTCATC-3'
SEQ ID NO.: 54 161-3	5'-CCTACTAXCGTTCTCATC-3'
SEQ ID NO.: 55 161-4	5'-CCTAXTAGCGTTCTCATC-3'
SEQ ID NO.: 56 161-5	5'-CCTACTAGCGTTCTXATC-3'

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3'-Deoxynucleoside

**FIG. 12A**

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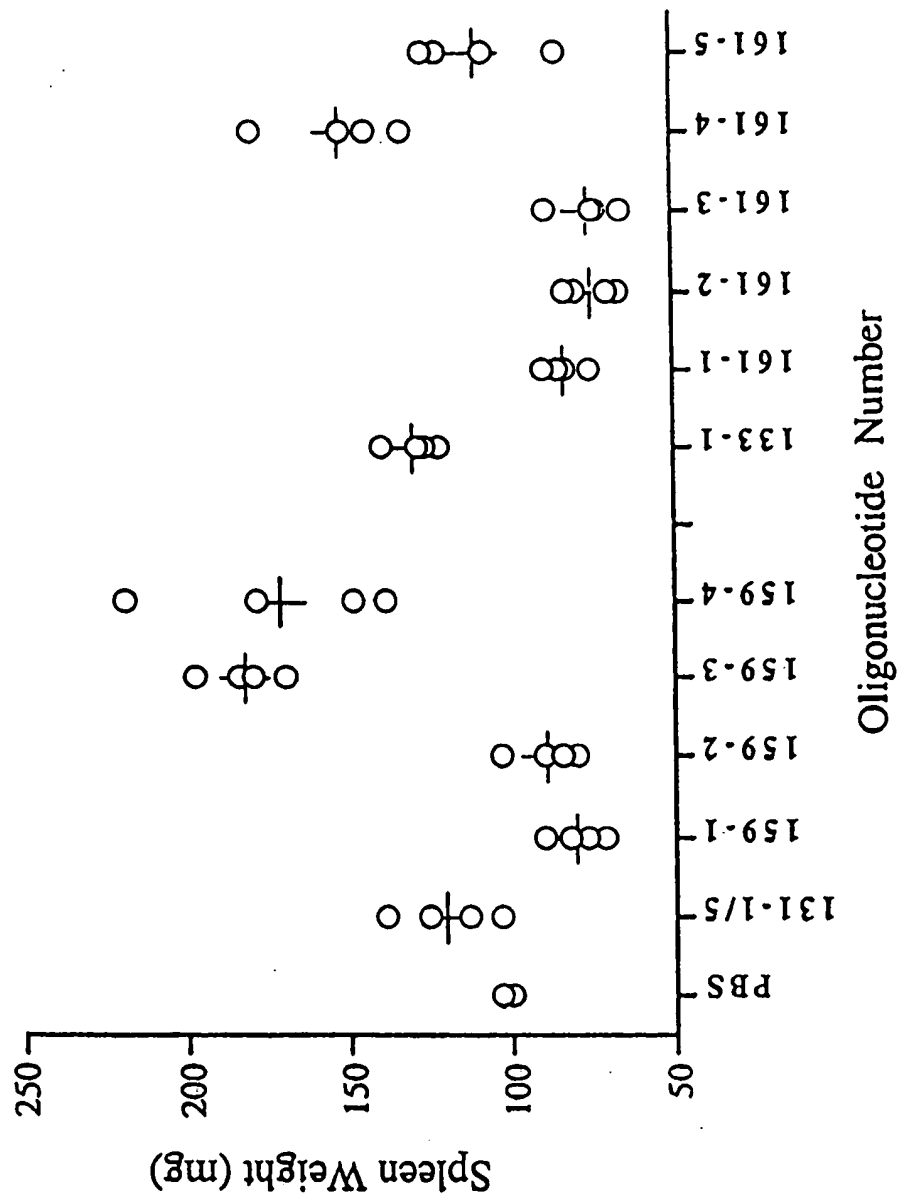


FIG. 12B



OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

<i>Oligo No.</i>	<i>Sequence &amp; Modification</i>
SEQ ID NO.: 1 131-1	5'-CTATCTGACGTTCTCTGT-3'
SEQ ID NO.: 57 167-1	5'-CTATCTGXCGTTCTCTGT-3'
SEQ ID NO.: 58 167-2	5'-CTATCTXACGTTCTCTGT-3'
SEQ ID NO.: 59 167-3	5'-CTATCXGACGTTCTCTGT-3'
SEQ ID NO.: 60 167-4	5'-CTATXTGACGTTCTCTGT-3'
SEQ ID NO.: 61 167-5	5'-CTAXCTGACGTTCTCTGT-3'
SEQ ID NO.: 62 167-6	5'-CTXXXCTGACGTTCTCTGT-3'
SEQ ID NO.: 63 167-7	5'-CTATCTGACGXTCCTCTGT-3'
SEQ ID NO.: 64 167-8	5'-CTATCTGACGTXCCTCTGT-3'
SEQ ID NO.: 65 167-9	5'-CTATCTGACGTTXCTCTGT-3'
SEQ ID NO.: 66 167-10	5'-CTATCTGACGTTXCCTGT-3'
SEQ ID NO.: 67 167-11	5'-CTATCTGACGTTCTXTGT-3'
SEQ ID NO.: 68 167-12	5'-CTATCTGACGTTCTXXGT-3'

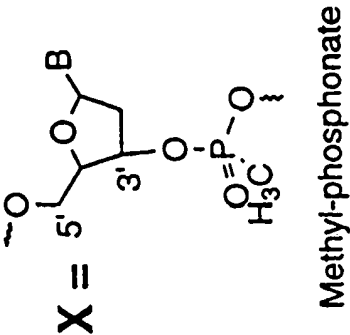


FIG. 13A

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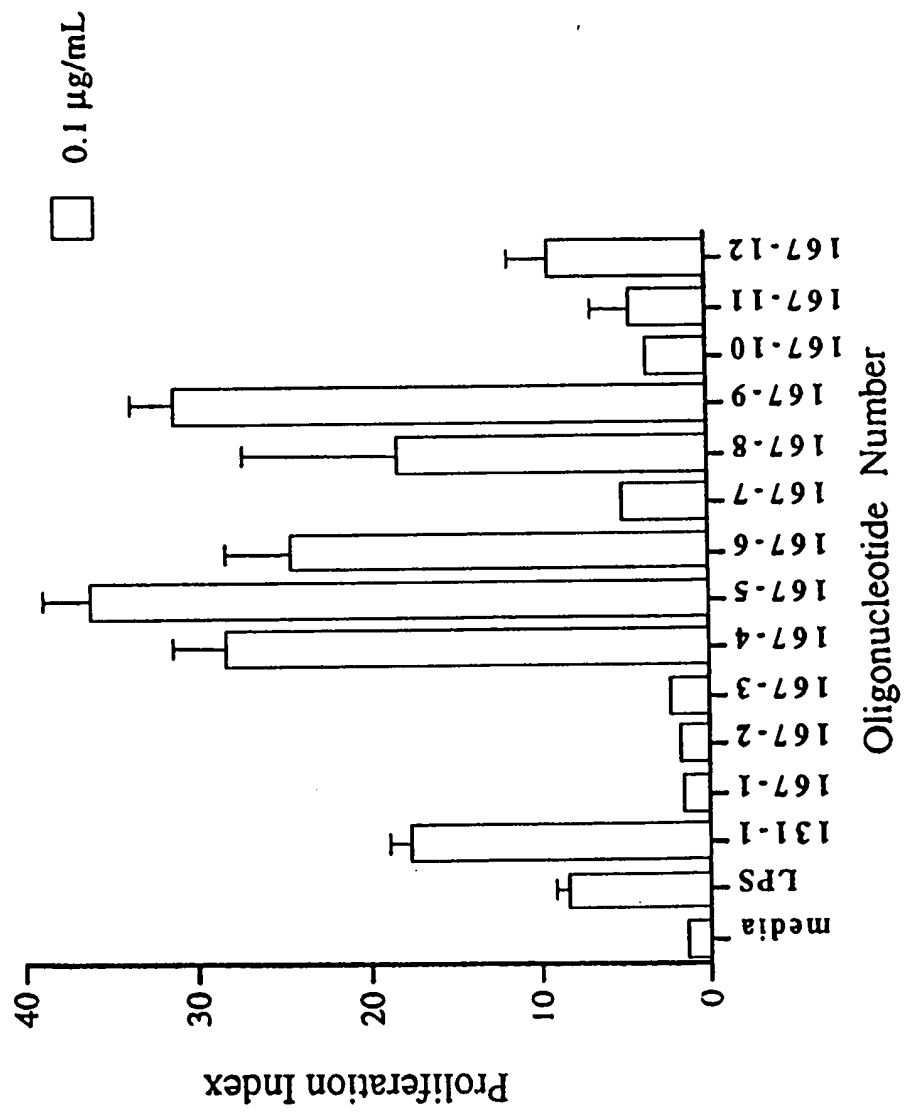


FIG. 13B

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## OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

<i>Oligo No.</i>	<i>Sequence &amp; Modification</i>
SEQ ID NO.: 1 131-1	5'-CTATCTGACGTTCTCTGT-3'
SEQ ID NO.: 57 167-1	5'-CTATCTGXCGTTCTCTGT-3'
SEQ ID NO.: 58 167-2	5'-CTATCTXACGTTCTCTGT-3'
SEQ ID NO.: 59 167-3	5'-CTATCXGACGTTCTCTGT-3'
SEQ ID NO.: 60 167-4	5'-CTATXTGACGTTCTCTGT-3'
SEQ ID NO.: 61 167-5	5'-CTAXCTGACGTTCTCTGT-3'
SEQ ID NO.: 62 167-6	5'-CTXXXCTGACGTTCTCTGT-3'
SEQ ID NO.: 63 167-7	5'-CTATCTGACGXTCCTCTGT-3'
SEQ ID NO.: 64 167-8	5'-CTATCTGACGTXCCTCTGT-3'
SEQ ID NO.: 65 167-9	5'-CTATCTGACGTTXCTCTGT-3'
SEQ ID NO.: 66 167-10	5'-CTATCTGACGTTXCCTGT-3'
SEQ ID NO.: 67 167-11	5'-CTATCTGACGTTCTXTGT-3'
SEQ ID NO.: 68 167-12	5'-CTATCTGACGTTCTXXGT-3'

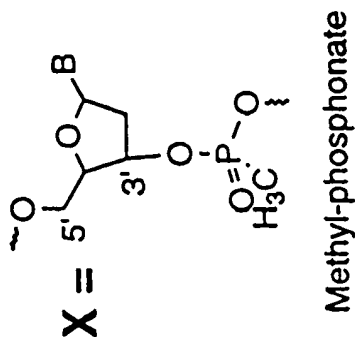


FIG. 14A

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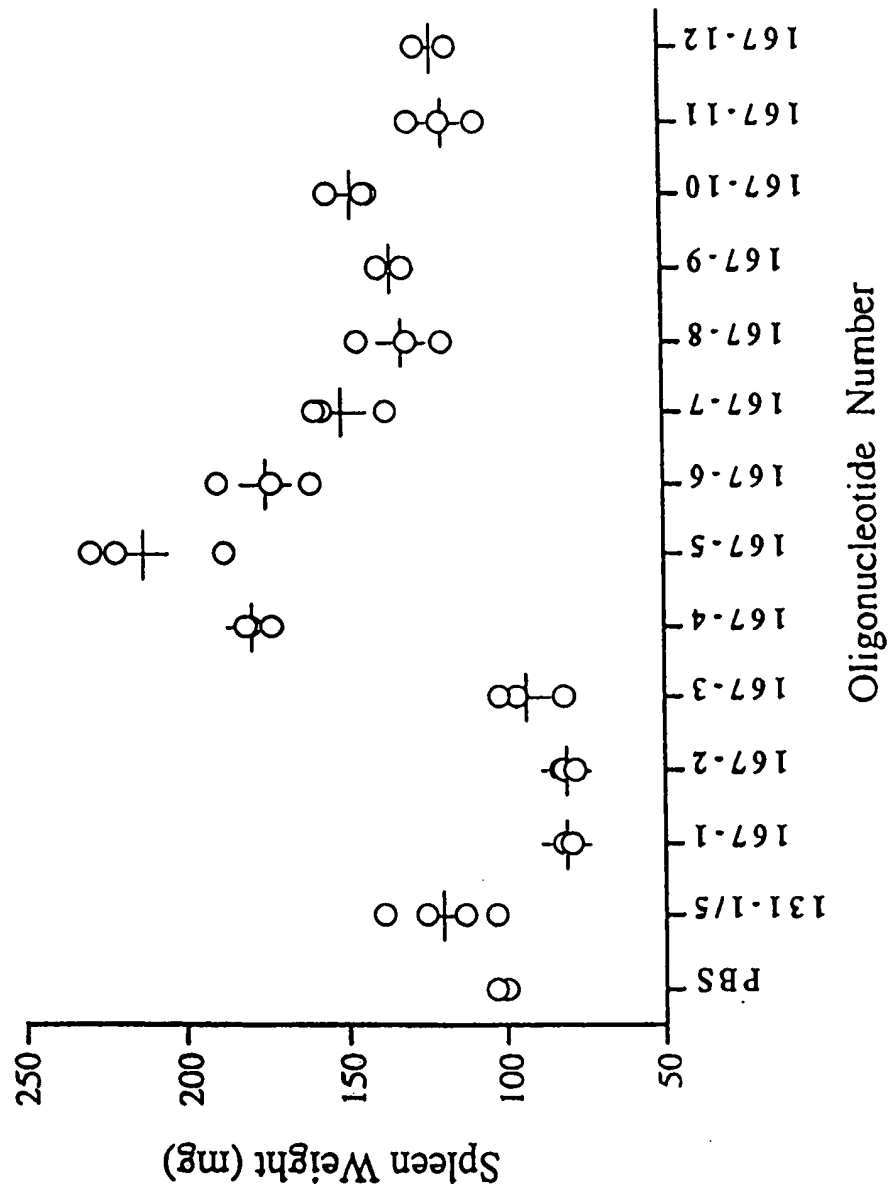
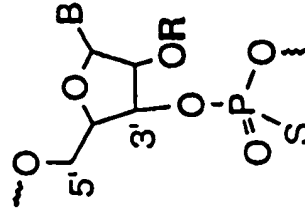


FIG. 14B

## OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

*Oligo No.      Sequence & Modification*

SEQ ID NO.: 69	113-1	5'-TCCATGACGTTCCCTGATGC-3'
SEQ ID NO.: 70	23-1	5'-TCCATGXCGTTCCTGATGC-3'
SEQ ID NO.: 71	23-3	5'-TCCAXGACGTTCCCTGATGC-3'
SEQ ID NO.: 72	29-2	5'-TYATGACGGTCCCTGATGC-3'



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R<sub>x</sub> = 2'-O-Methylribonucleoside  
R<sub>y</sub> = 2'-O-Methoxyethoxyribonucleoside

FIG. 15A

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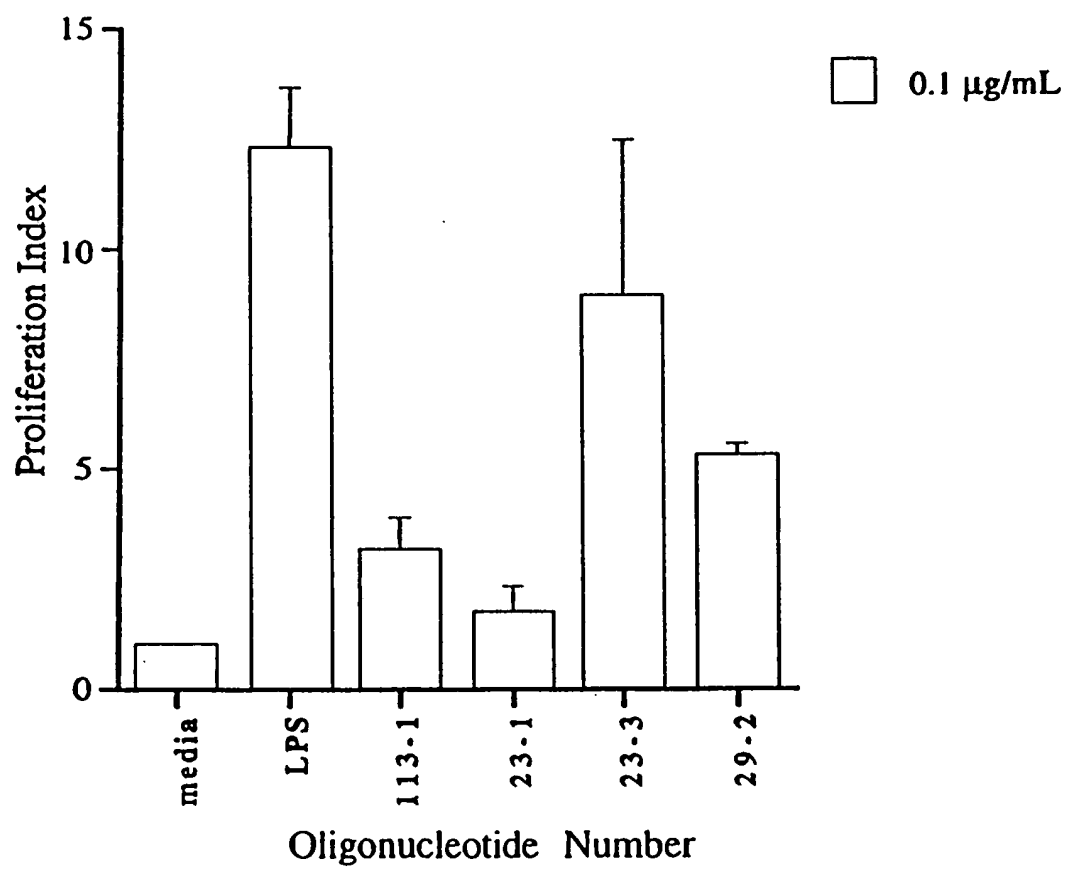
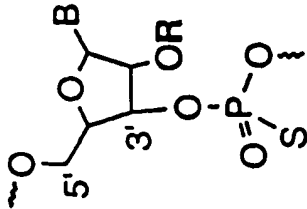


FIG. 15B

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

Oligo No.		Sequence & Modification
SEQ ID NO.: 69	113-1	5'-TCCATGACGTTCTGATGC-3'
SEQ ID NO.: 70	23-1	5'-TCCATGXCGTTCTGATGC-3'
SEQ ID NO.: 71	23-3	5'-TCCAXGACGTTCTGATGC-3'
SEQ ID NO.: 72	29-2	5'-TYATGACGGTCTGATGC-3'



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R<sub>x</sub> = 2'-O-Methylribonucleoside  
R<sub>y</sub> = 2'-O-Methoxyethoxyribonucleoside

FIG. 16A

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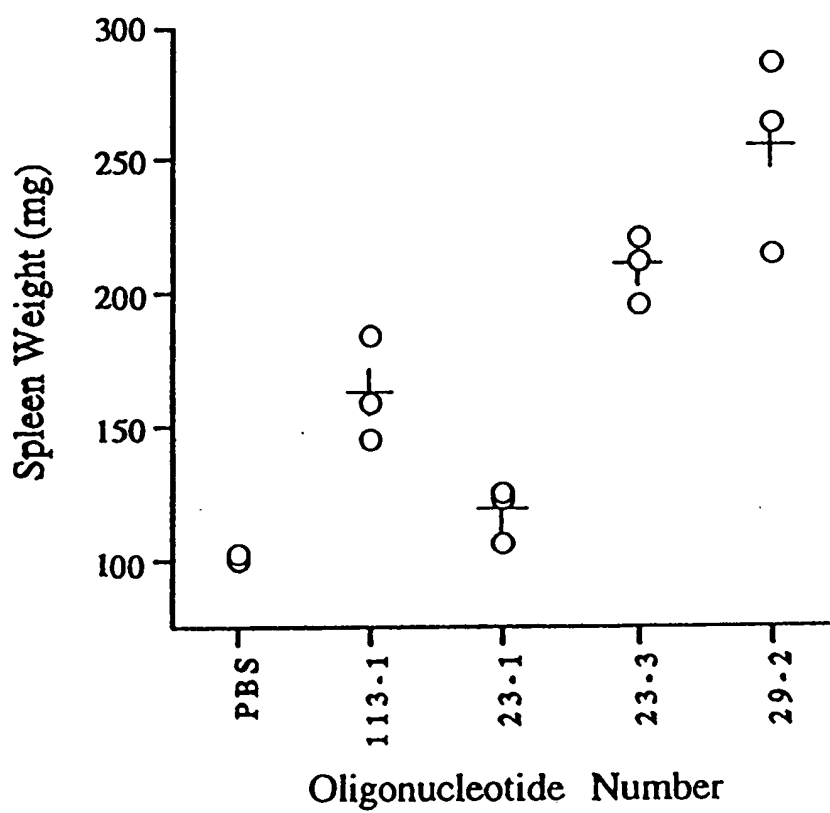


FIG. 16B



## OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

<i>Oligo No.</i>	<i>Sequence &amp; Modification</i>
SEQ ID NO.: 73 1	5'-GAGAACGCTCGACCTT-3'
SEQ ID NO.: 74 2	5'-GAGAACGCTCGACCTT-3' — 5'-GAGAACGCTCGACCTT-3'
SEQ ID NO.: 75 3	3'-TTCCAGCTCGCAAGAG-5' — 5'-GAGAACGCTCGACCTT-3'
SEQ ID NO.: 76 4	5'-GAGAACGCTCGACCTT-3' — 3'-TTCCAGCTCGCAAGAG-5'
SEQ ID NO.: 77 5	5'-TCTCCAGCGTGCGCCAT-3'
SEQ ID NO.: 78 6	5'-TCTCCAGCGTGCGCCAT-3' — 5'-TCCAGCGTGCGCCAT-3'
SEQ ID NO.: 79 7	3'-TACCGCGTGCGACCCCT-5' — 5'-TCCAGCGTGCGCCAT-3'
SEQ ID NO.: 80 8	5'-TCCAGCGTGCGCCAT-3' — 3'-TACCGCGTGCGACCCCT-5'

FIG. 17A

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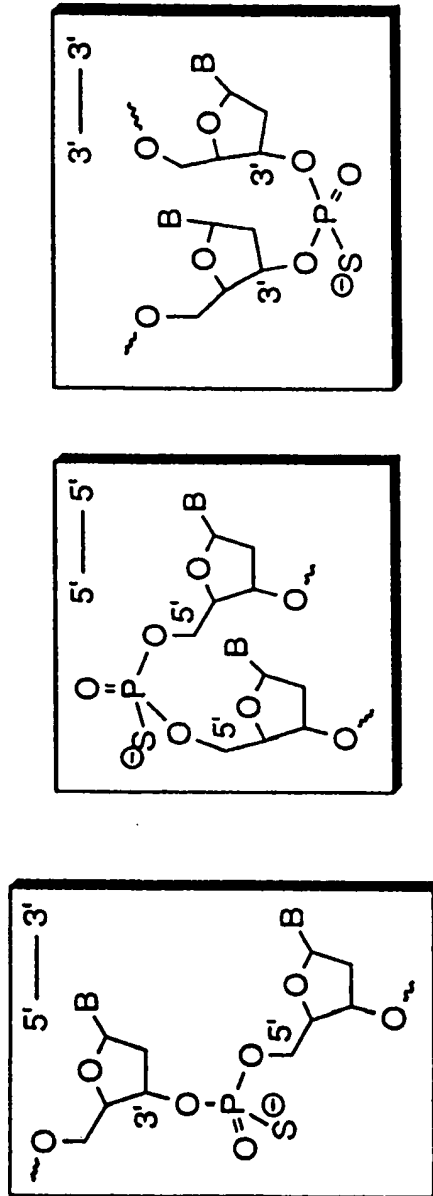


FIG. 17B

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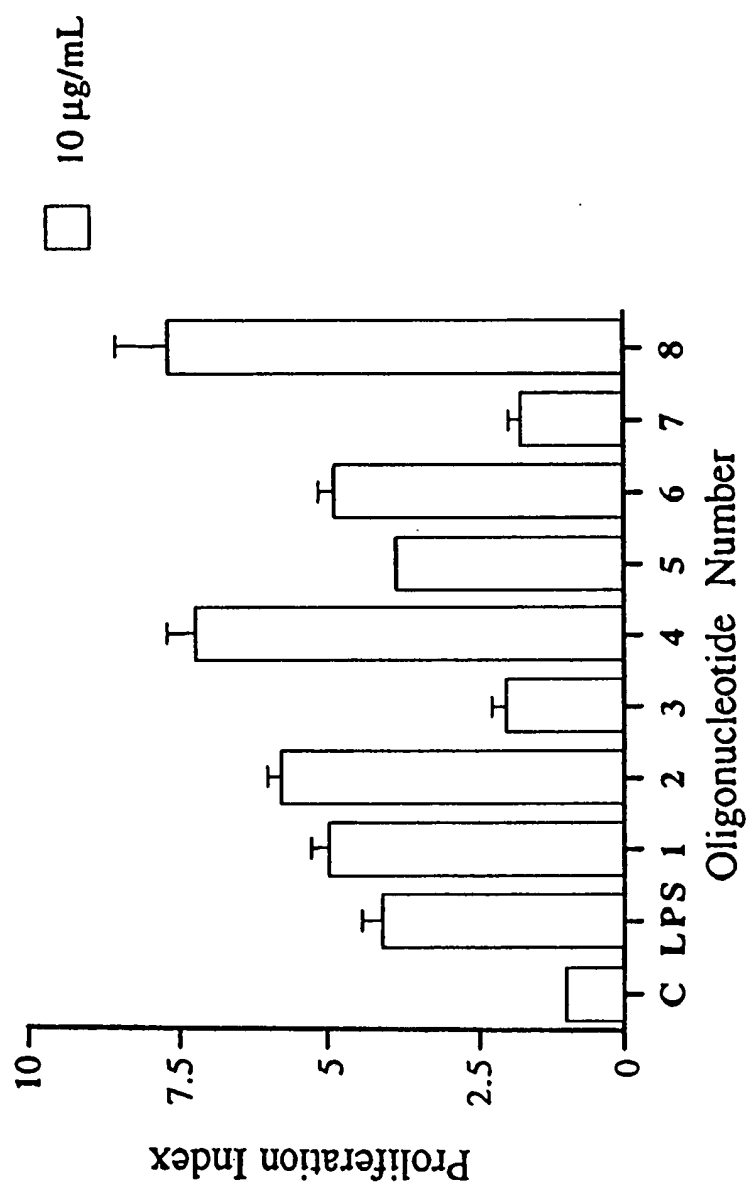
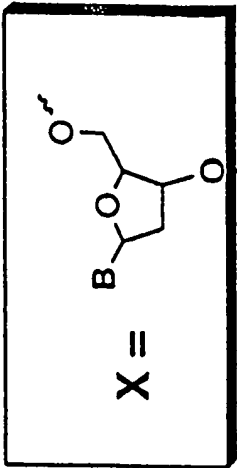


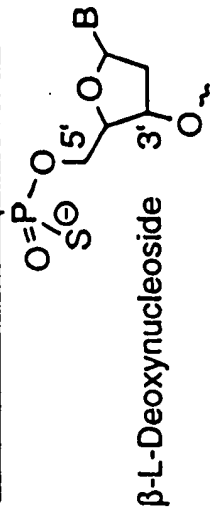
FIG. 17C

OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

Oligo No.		Sequence & Modification
SEQ ID NO.: 1	131-1	5'-CTATCTGACGTTCTCTGT-3'
SEQ ID NO.: 81	175-1	5'-CTATXTGACGTTCTCTGT-3'
SEQ ID NO.: 82	175-2	5'-CTATCTGACGTTTCXCTGT-3'
SEQ ID NO.: 83	175-3	5'-CTAXXTGACGTTCTCTGT-3'
SEQ ID NO.: 84	175-4	5'-CTATCTGACGTTTCXXTGT-3'
SEQ ID NO.: 85	175-5	5'-CTATCTGAXXTTCTCTGT-3'
SEQ ID NO.: 86	175-6	5'-CTATCTXACGTTCTCTGT-3'
SEQ ID NO.: 87	175-7	5'-CTATCTGACGTXCCTCTGT-3'
SEQ ID NO.: 88	175-9	5'-CTATCTGACGTTCTCTGT-3' (all-β-L-DNA/PS)

X =





β-L-Deoxynucleoside

FIG. 18A

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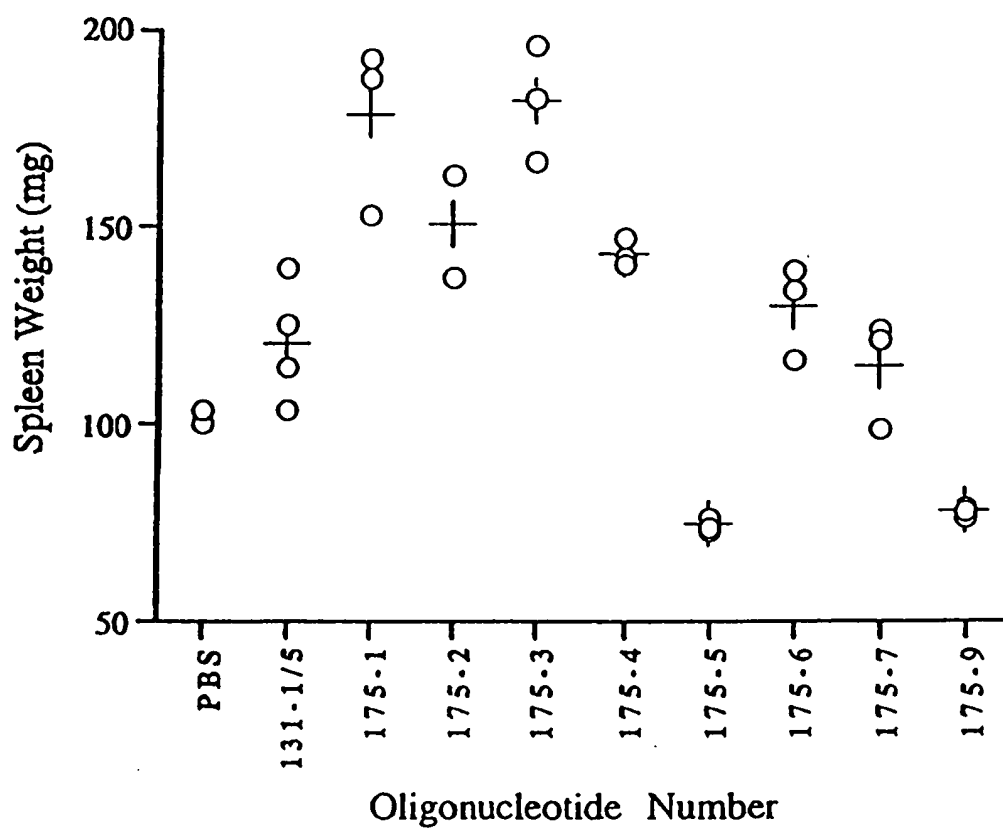
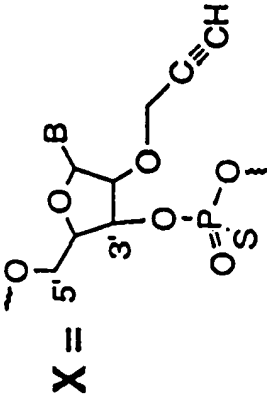


FIG. 18B

## OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

<i>Oligo No.</i>	<i>Sequence &amp; Modification</i>
SEQ ID NO.: 1 131-1	5'-CTATCTGACGTTCTCTGT-3'
SEQ ID NO.: 89 173-1	5'-CTATXTGACGTTCTCTGT-3'
SEQ ID NO.: 90 173-2	5'-CTATCTGACGTTCTXTGT-3'

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$X =$  

2'-O-Propargyl-ribonucleoside

FIG. 19A

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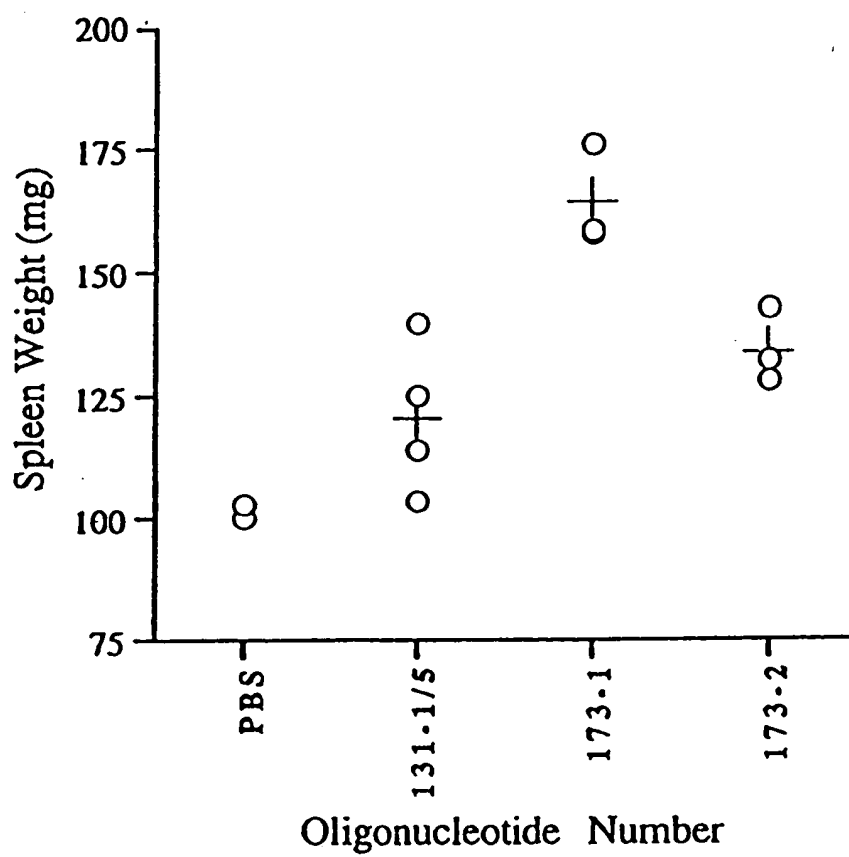


FIG. 19B

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## OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND MODIFICATION OF LINKAGES

<i>Oligo No.</i>		<i>Sequence &amp; Modification</i>
SEQ ID NO.: 8	133-1	5'-CCTACTAGCGTTCTCATC-3'
SEQ ID NO.: 91	143-1	5'-CCTXXTAGCGTTCTCATC-3'
SEQ ID NO.: 92	143-2	5'-CCTYYTAGCGTTCTCATC-3'
SEQ ID NO.: 93	143-3	5'-CCTZZTAGCGTTCTCATC-3'
SEQ ID NO.: 94	143-4	5'-CCTXXTAGCGTVCTCATC-3'
SEQ ID NO.: 95	143-5	5'-CCTACTAGG <u>C</u> TTCTCATC-3'

X = 1',2'-Dideoxyribose  
Y = C3-Linker  
Z = 3'-OMe  
V = 2'-OMe

FIG. 20A



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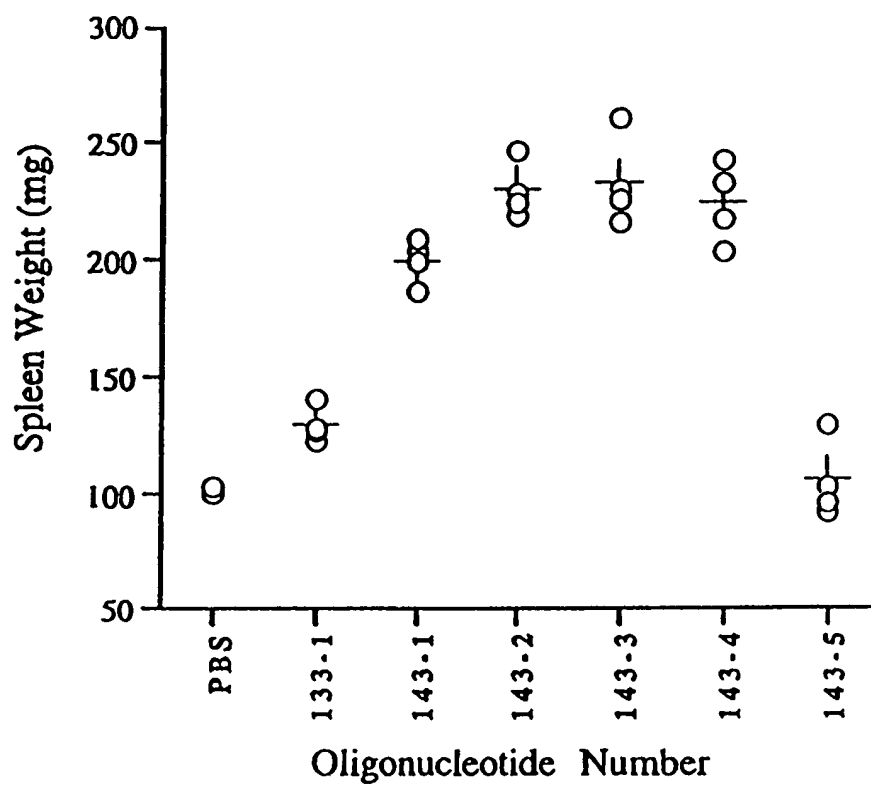


FIG. 20B

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OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND  
MODIFICATION OF LINKAGES

<i>Oligo No.</i>	<i>Sequence &amp; Modification</i>
SEQ ID NO.: 1	1 5'-CTATCTGAC <u>CG</u> TTCTCTGT-3' (131-1)
SEQ ID NO.: 96	2 5'-CTATCTGAC <u>CG</u> *TTCTCTGT-3' (E 633L)
SEQ ID NO.: 97	3 5'-CTATCTGAG* <u>CTT</u> CTCTGT-3' (E 636)
SEQ ID NO.: 98	4 5'-TCTCCCAG <u>CG</u> TG <u>CG</u> CCAT-3'
SEQ ID NO.: 99	5 5'-TCTCCCAG <u>CG</u> *TG <u>CG</u> *CCAT-3' (E 603)
SEQ ID NO.: 100	6 5'-CTATXTGAC <u>CG</u> *TTCTCTGT-3' (E 639L)

FIG. 21A

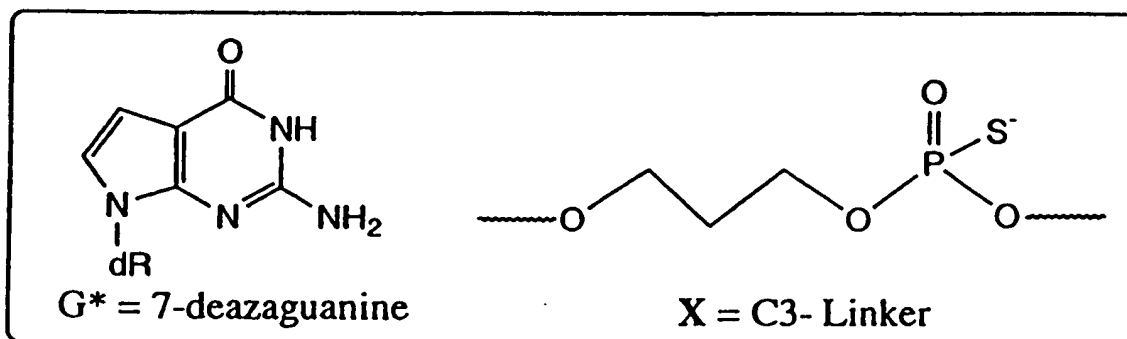


FIG. 21B

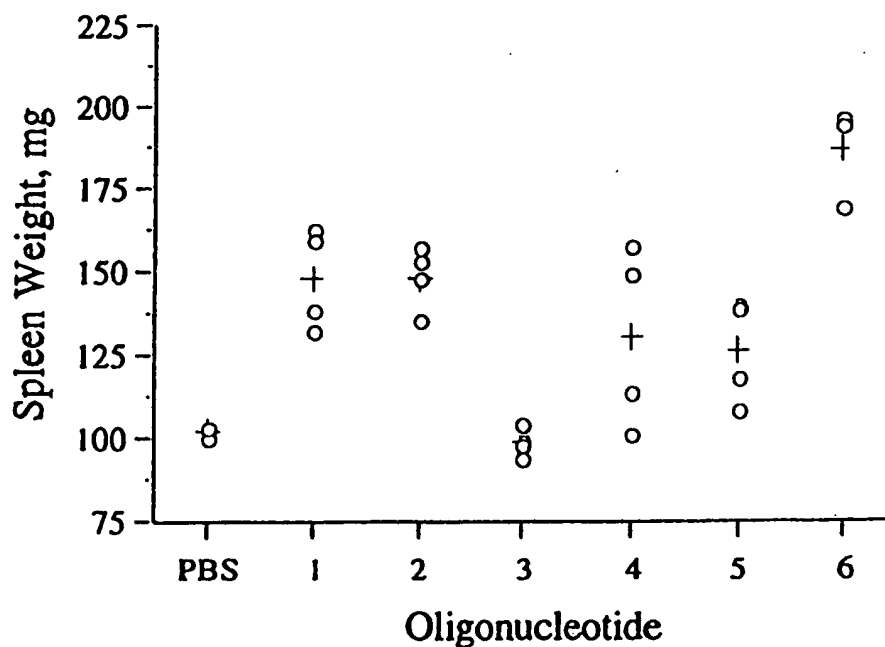


FIG. 21C

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## OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

<i>Oligo No.</i>	<i>Sequence &amp; Modification</i>
------------------	------------------------------------

SEQ ID NO.: 1	1	5'-CTATCTGAC <u>CG</u> TTCTCTGT-3' (131-1)
SEQ ID NO.: 101	2	5'-CTATCTGAC <u>CG</u> *TTCTCTGT-3' (E 682)
SEQ ID NO.: 102	3	5'-CTATCTGAG* <u>CT</u> TTCTCTGT-3' (E 683)

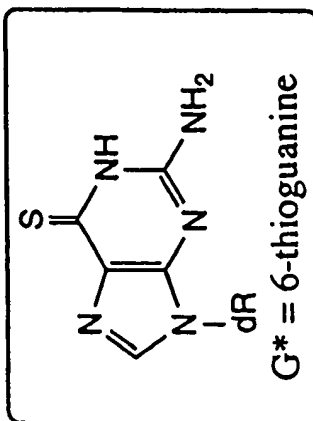


FIG. 22A

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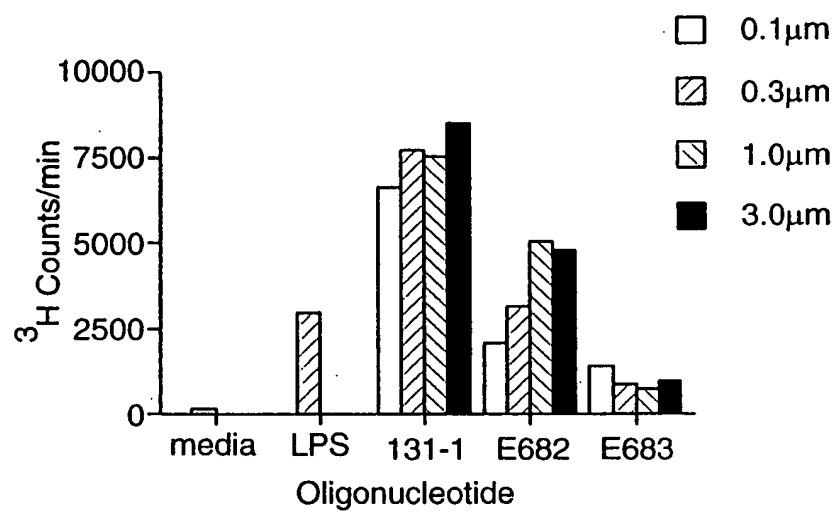


FIG. 22B

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## OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

*Oligo No. Sequence & Modification*

SEQ ID NO.: 1 1 5'-CTATCTGACGTTCTCTGT-3'

SEQ ID NO.: 2 2 5'-CTATCTGAC\*GTTCTCTGT-3'

SEQ ID NO.: 3 3 5'-CTATCTGACC\*TTCTCTGT-3'

SEQ ID NO.: 4 4 5'-CTATCTGAC\*\*GTTCTCTGT-3'

SEQ ID NO.: 5 5 5'-CTATCTGACC\*TTTCTCTGT-3'

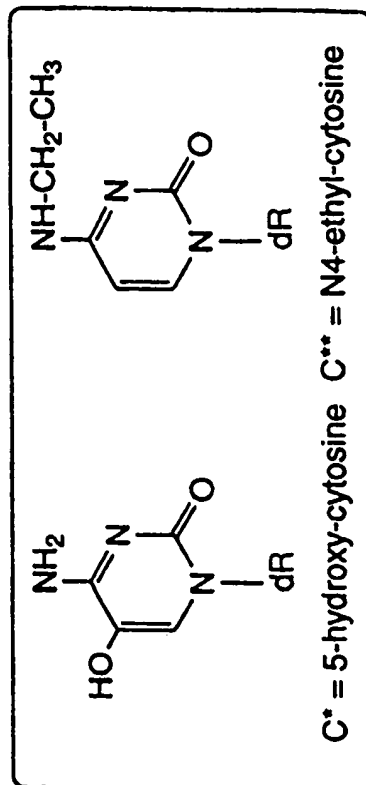


FIG. 23A

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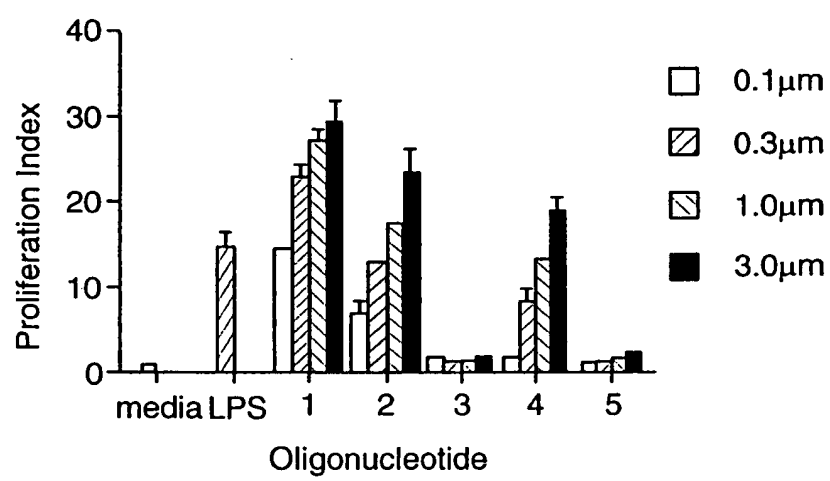


FIG. 23B

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## OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

*Oligo No. Sequence & Modification*

SEQ ID NO.: 1	1	5'-CTATCTGAC <u>CG</u> TTCTCTGT-3'
SEQ ID NO.: 2	2	5'-CTATCTGAC* <u>GTT</u> CTCTGT-3'
SEQ ID NO.: 3	3	5'-CTATCTGAC <u>CC</u> *TTCTCTGT-3'
SEQ ID NO.: 4	4	5'-CTATCTGAC* <u>GTT</u> CTCTGT-3'
SEQ ID NO.: 5	5	5'-CTATCTGAC <u>CC</u> *TTCTCTGT-3'

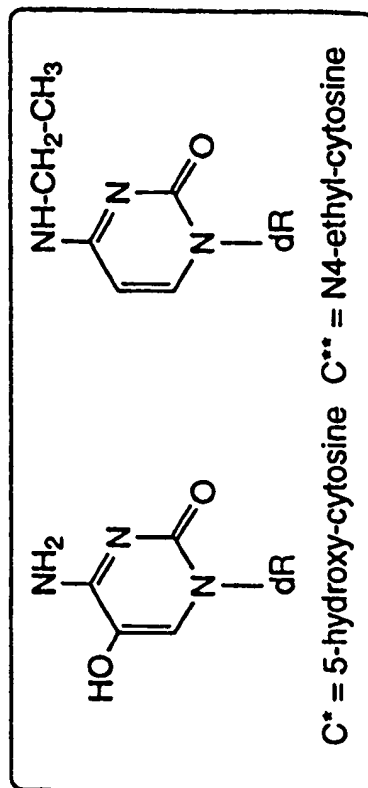


FIG. 24A

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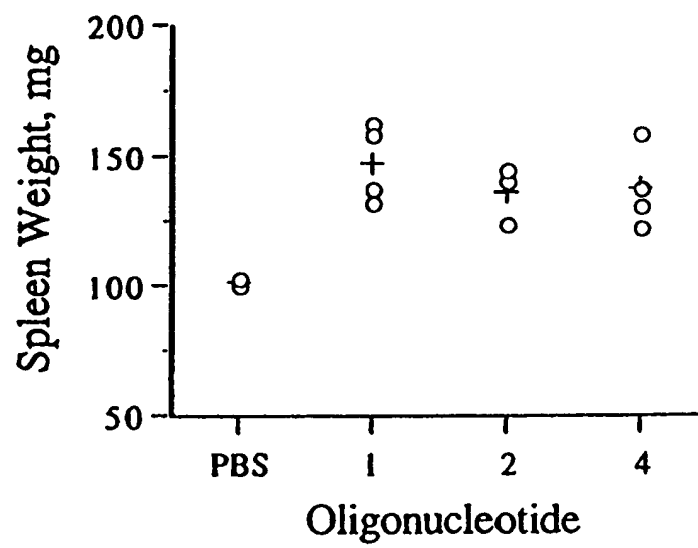


FIG. 24B



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## OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

<i>Oligo No.</i>	<i>Sequence &amp; Modification</i>
------------------	------------------------------------

SEQ ID NO.: 1	1	5'-CTATCTGAC <u>G</u> TTCTCTGT-3'
SEQ ID NO.: 111	2	5'-CTATCTGAC* <u>G</u> TTCTCTGT-3'
SEQ ID NO.: 112	3	5'-CTATCTGAC <u>CC</u> *TTCTCTGT-3'

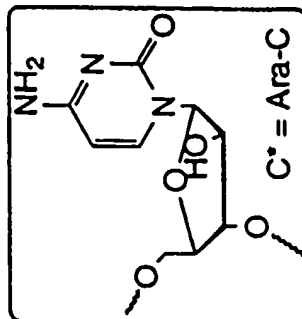


FIG. 25A

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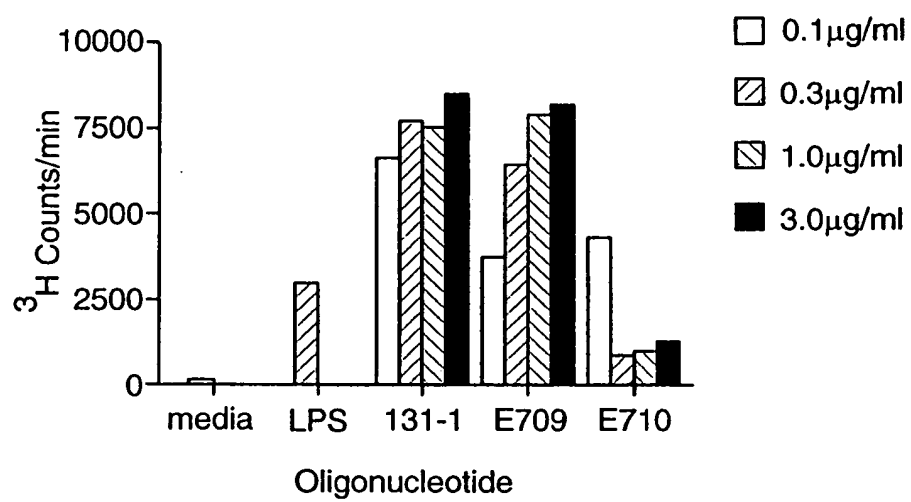


FIG. 25B

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## OLIGODEOXYNUCLEOTIDE PHOSPHOROTHIOATES AND SITE OF MODIFICATION

*Oligo No. Sequence & Modification*

- SEQ ID NO.: 1 1 5'-CTATCTGACCGTTCTCTGT-3' (131-1)
- SEQ ID NO.: 2 5'-CTATCTGAC\*GTTTCTCTGT-3' (E 647)
- SEQ ID NO.: 3 5'-CTATXTGAC\*GTTTCTCTGT-3' (E 653)

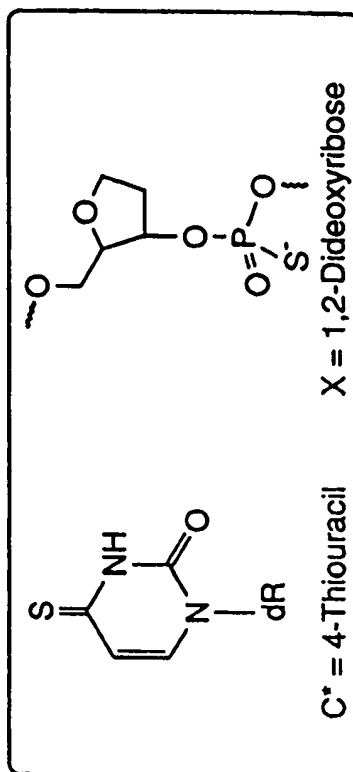


FIG. 26A

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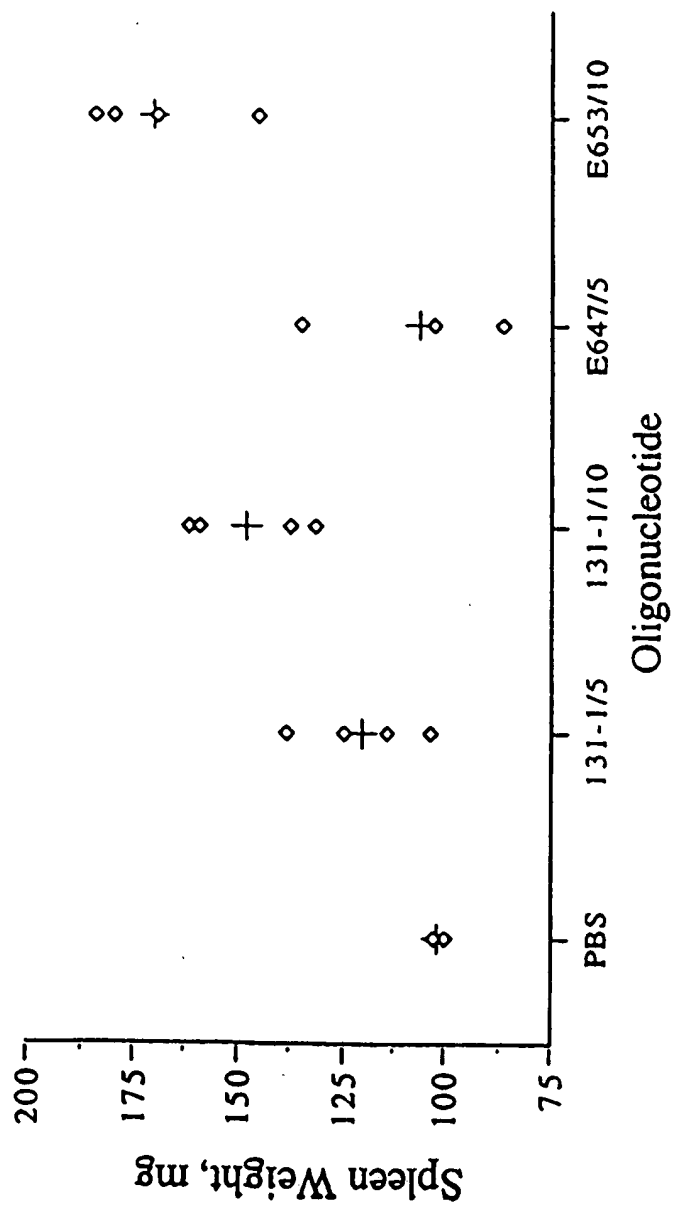


FIG. 26B

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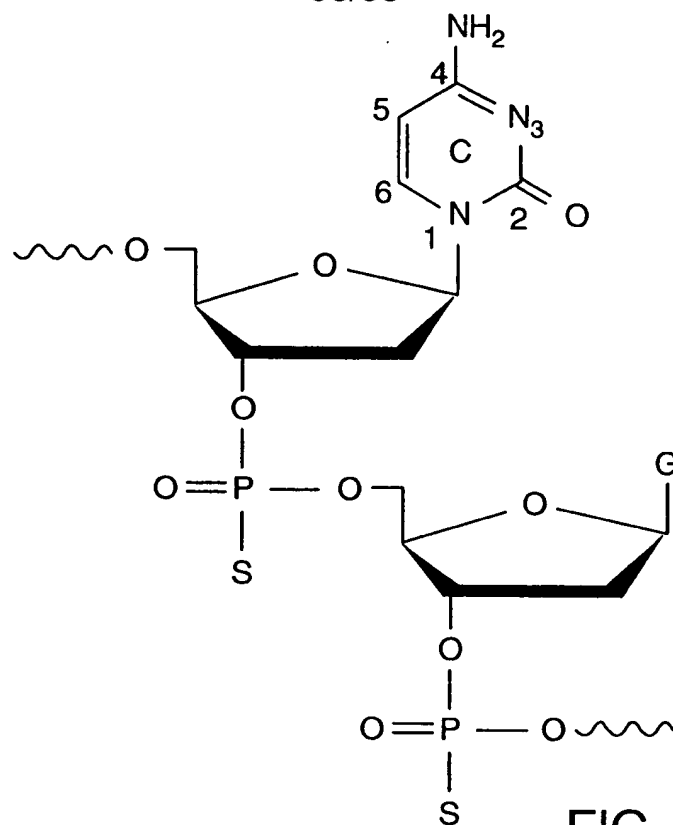


FIG. 27

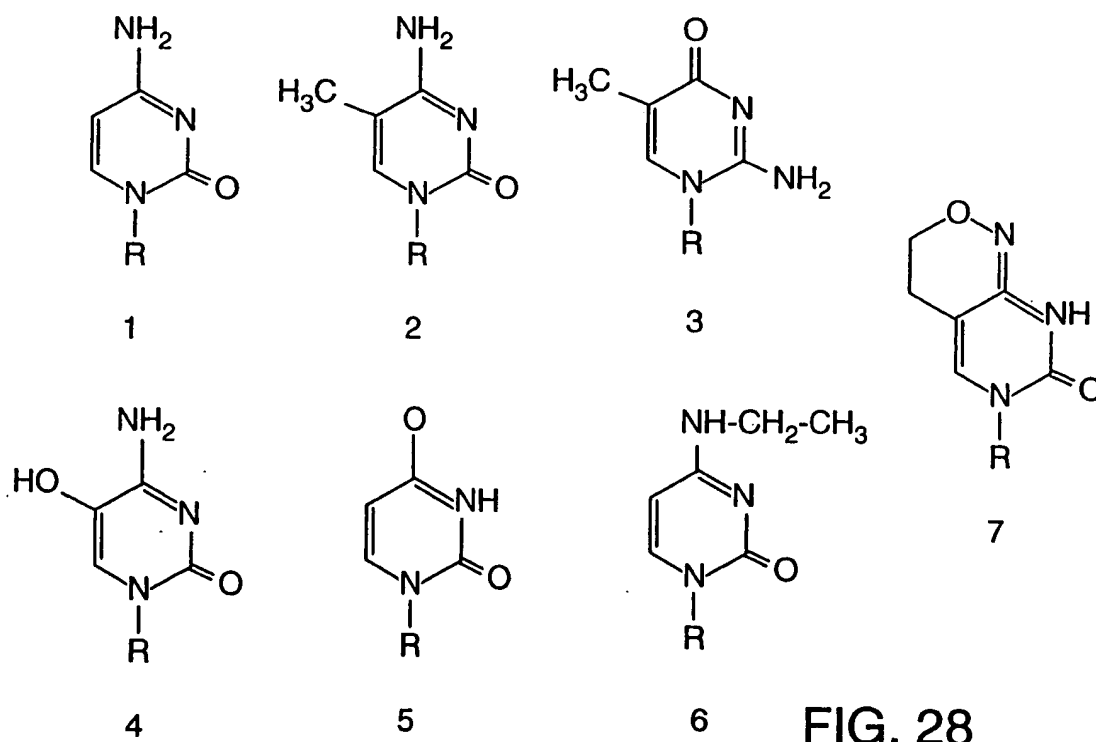


FIG. 28